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POLLUTION OF LAKE ERIE AND ITS TRIBUTARIES - INDIANA, MICHIGAN, NEW YORK, OHIO, PENNSYLVANIA. PROCEEDINGS OF CONFERENCE, FOURTH SESSION, HELD AT CLEVELAND, OHIO ON OCTOBER 4, 1968

Federal Water Pollution Control
Administration
Washington, D. C.

4 October 1968

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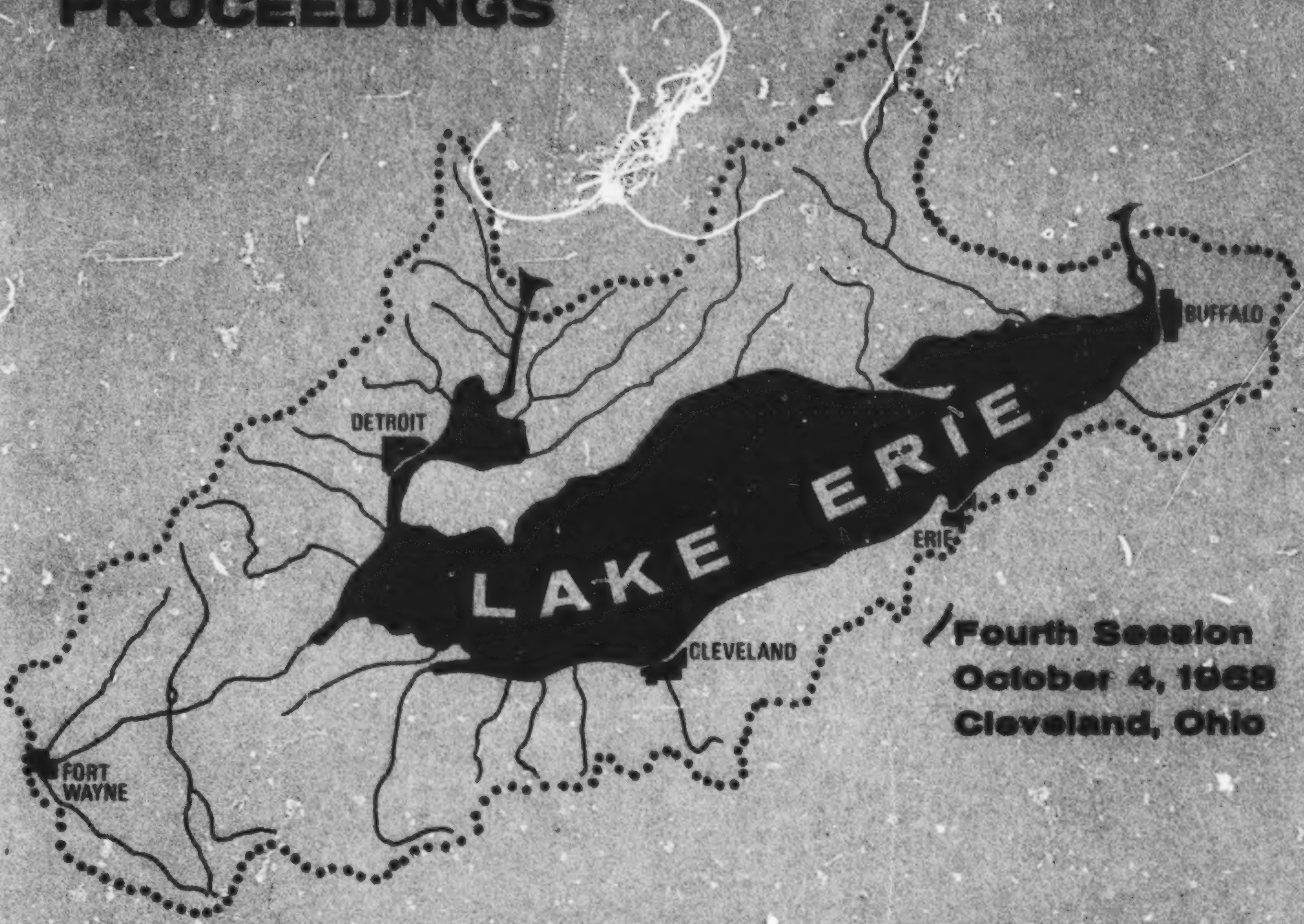
PROCEEDINGS


DETROIT
LAKE ERIE
BUFFALO
ERIE
CLEVELAND
FORT WAYNE

Fourth Session
October 4, 1968
Cleveland, Ohio

CONFERENCE

Pollution of Lake Erie and its Tributaries--
Indiana, Michigan, New York, Ohio, Pennsylvania

U.S. DEPARTMENT OF THE INTERIOR • FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

CONFERENCE PROCEEDINGS
POLLUTION OF LAKE ERIE
AND ITS TRIBUTARIES

FOURTH SESSION
CLEVELAND, OHIO
OCTOBER 4, 1968

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Fourth Session of the Conference in the Matter of Pollution of Lake Erie and Its Tributaries (Indiana-Michigan-New York-Ohio-Pennsylvania), held at the Pick Carter Hotel, Cleveland, Ohio, on October 4, 1968, at 9:30 a.m.

PRESIDING:

Mr. Murray Stein, Assistant Commissioner for Enforcement, Federal Water Pollution Control Administration, Department of the Interior, Washington, D.C.

CONFEREES:

Loring F. Oeming, Executive Secretary, Michigan Water Resources Commission, Lansing Michigan

Perry E. Miller, Assistant Director, Division of Sanitary Engineering, Bureau of Environmental Sanitation, Indiana Stream Pollution Control Board, Indianapolis, Indiana

CONFEREES (Continued):

H. W. Poston, Regional Director, Great Lakes Region, Federal Water Pollution Control Administration, Department of the Interior, Chicago, Illinois

Dwight F. Metzler, Deputy Commissioner, New York State Department of Health, Division of Pure Waters, Albany, New York

Richard M. Boardman, Director, Division of Water Quality, Pennsylvania Department of Health, Harrisburg, Pennsylvania

Dr. E. W. Arnold, Director, Ohio Department of Health, Columbus, Ohio

George H. Eagle, Chief Engineer, Ohio Department of Health, Columbus, Ohio

PARTICIPANTS:

George L. Harlow, Director, Cleveland Program Office, Federal Water Pollution Control Administration, Cleveland, Ohio

Dr. Leo J. Hetling, Director, Research, Environmental Health Services, New York Department of Health, Albany, New York

PARTICIPANTS (Continued):

Hon. Charles A. Vanik, U.S. House of Representatives, Washington, D.C., Ohio 21st Congressional District

ATTENDEES:

Donald Alexander, Citizen, Cleveland, Ohio

L. F. Birkel, Republic Steel Corporation, Cleveland, Ohio

Robert C. Black, Soap and Detergent Association, New York City

Thomas Braidech, Biologist, Federal Water Pollution Control Administration, Cleveland, Ohio

S. D. Bresler, City of Lima, Lima, Ohio

D. Callahan, Construction Grants, OBR, Federal Water Pollution Control Administration, Cincinnati, Ohio

Lamont W. Curtis, Project Engineer, Havens and Emerson, Cleveland, Ohio

Seba H. Estill, Izaak Walton League, Cleveland, Ohio

George B. Garrett, Engineer, Ohio Department of Health, Columbus, Ohio

Joseph B. Gaghen, Dow Chemical Company, Cleveland, Ohio

Carolyn A. Gazdik, Citizen, Cleveland, Ohio

ATTENDEES (Continued):

W. E. Gerdel, Commissioner, Division of Water Pollution Control, City of Cleveland, Cleveland, Ohio

James L. Greener, II, District Sanitary Engineer, Ohio Department of Health, Cuyahoga Falls, Ohio

Frank Hall, Great Lakes Region, FWPCA, Chicago, Illinois

G. A. Hall, Engineer-Secretary, Ohio Water Pollution Control Board, Ohio Department of Health, Columbus, Ohio

Richard D. Hall, Diamond Shamrock Corporation, Cleveland, Ohio

Charles Hina, Chemist, City of Cleveland, Cleveland, Ohio

Bob Howick, Reporter, Channel 61-TV, Cleveland, Ohio

Thomas J. Jacobs, Editorial Correspondent, McGraw-Hill Publishing Company, Cleveland, Ohio

John Kinney, Ann Arbor, Michigan

Betty Klaric, Reporter, The Cleveland Press, Cleveland, Ohio

Conrad O. Kleveno, Biologist, Federal Water Pollution Control Administration, Cleveland, Ohio

Gary Kotch, Channel 61-TV, Cleveland, Ohio

ATTENDEES (Continued):

James McDonald, Great Lakes Region, Federal Water Pollution Control Administration, Chicago, Illinois

Erwin J. Odeal, Sanitary Engineer, Ohio Department of Health, Cuyahoga Falls, Ohio

Laurence B. O'Leary, Director, Detroit Program Office, Federal Water Pollution Control Administration, Grosse Ile, Michigan

Edward A. Kramer, Sanitary Engineer, FWPCA, Cleveland, Ohio

Dr. Paul Olynyk, Associate Professor, Cleveland State University, Cleveland, Ohio

Rheta Pierre, Federal Water Pollution Control Administration, Washington, D.C.

Chris Potos, Chief of Laboratories, Cleveland Program Office, Federal Water Pollution Control Administration, Cleveland, Ohio

Glenn D. Pratt, Great Lakes Region, Federal Water Pollution Control Administration, Chicago, Illinois

Bob Quinlan, Channel 61-TV, Cleveland, Ohio

John E. Richards, Ohio Department of Health, Engineer-in-Charge, Columbus, Ohio

L. E. Rigby, Engineer, F. G. Browne and Associates, Marion, Ohio

Art Robinson, Ohio Department of Health, Columbus, Ohio

ATTENDEES (Continued):

Ray Roth, Chief Civil Engineer, Water Pollution Center, City of Cleveland, Cleveland, Ohio

Agnes Rupp, Citizen, Cleveland, Ohio

K. K. Saigal, Project Engineer, Dalton-Dalton Associates, Cleveland, Ohio

James P. Schaefer, Biologist, City of Cleveland, Cleveland, Ohio

Gerald Siegmyer, President, Trustees, Holiday Lakes, Willard, Ohio; Parma, Ohio

Alfred C. Smith, Chemist, Federal Water Pollution Control Administration, Cleveland, Ohio

George V. Voinovich, State Representative, Fifty-Third Ohio House District, Cleveland, Ohio

Adel Wagner, Citizen, Lakewood, Ohio

William Warnement, Engineer, Standard Oil Company, Cleveland, Ohio

George H. Watkins, Executive Director, Lake Erie Watershed Conservation Foundation, Cleveland, Ohio

P. J. Weaver, Soap and Detergent Association, Cincinnati, Ohio

John Wilson, Chief, Data Processing, Federal Water Pollution Control Administration, Cleveland, Ohio

John J. Wirts, Chemical Engineer, Easterly Pollution Control Center, Cleveland, Ohio

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PROCEEDINGS

OPENING STATEMENT

BY

MURRAY STEIN

MR. STEIN: The conference is open.

The Fourth Session of the conference in the matter of pollution of the interstate waters of Lake Erie is being held under the provisions of the Federal Water Pollution Control Act.

The parties to this conference are the Michigan Water Resources Commission, Indiana Stream Pollution Control Board, Ohio Department of Health, Pennsylvania Department of Health, New York State Department of Health and the United States Department of the Interior. Participation in this conference will be open to representatives of their agencies, their invitees and such persons as inform me they wish to present statements.

The Michigan Water Resources Commission is being represented by Mr. Loring Oeming. The Indiana Stream Pollution Control Board is being represented by Mr. Perry Miller. The Ohio Department of Health is being represented by Dr. Emmett Arnold and Mr. George Eagle; the Pennsylvania

Department of Health by Mr. Richard Boardman; the New York State Department of Health by Mr. Dwight Metzler. The Federal conferee is Mr. H. W. Poston; and my name is Murray Stein. I am from headquarters of the Department of the Interior, the representative of Secretary Udall.

The conferees from the five Lake Erie States have met several times since 1965 when the area-wide program was initiated to clean up the lake. More than three years ago, the conferees unanimously recommended maximum removal of phosphates from inputs to the lake as a major step in controlling Lake Erie's condition of accelerated eutrophication. This recommendation although not expressed in terms of specific quantification was history-making.

Since this was the first time, in August 1965, in the history of Federal-State abatement efforts that such a recommendation was offered, it recognized the importance of continuing refinement of pollution control programs to meet pollution problems and the realization that a forwardlooking large-scale approach to Lake Erie was urgently needed.

This problem of nutrients is cropping up in many of the areas in the country. We had to meet this problem in Lake Michigan and just now at least I have been working on a Potomac report where the control of nutrients again is a key problem.

On Lake Erie this was identified or given expression by the States and the Federal Government for the first time on a large scale. I think that on Lake Erie we possibly have not, as we have in Lake Michigan, come to the point where we are agreed on numbers and what has to be done.

We have had a Technical Committee, several technical meetings, information sessions, have attempted to bring the nationally-known experts on eutrophication to the conference, and we have had the benefit of a series of well thought out questions developed by Ohio, and at a previous technical meeting, we attempted to answer those questions and had a discussion on them.

I would hope that today at the fourth full session of the Lake Erie Pollution Abatement Conference that we can resolve this issue of phosphate removal or nutrient control and come up with some specific requirements. This is the hope for this meeting and we will discuss this here. But as I indicated to the conferees, we are open to other suggestions as to what to take up at the conference and I am in receipt of a letter from Mr. Oeming of Michigan who suggests that we have a discussion, too, of the control of pollution from boats in Lake Erie. I think since the phosphate or the nutrient control question is going to be the major question, we might take up this boat question first, If any of the other conferees -- after I call on Mr. Oeming and we conclude the boat question -- feel that they want to discuss any other problems before we get into the nutrient control question, let me know and we will make time available for them before we get to the nutrient question, I hope.

Now, we are making a verbatim transcript of the conference, and copies of the summary and the transcript will be made available to the agencies represented here. Anyone who wants a copy should get in touch with his appropriate State agency. Anyone other than the conferees who makes a statement at the conference will please come to the lectern, announce his name and affiliation before he makes his statement for the purposes of the record.

We will call on all the conferees for statements and have a discussion and then attempt to come to conclusions as we usually do.

Mr. Oeming, do you want to raise that boat question?

MR. OEMING: Chairman Stein and fellow conferees, I have reference to paragraph number three in Secretary Udall's summary of the Progress Evaluation Meeting held in Cleveland on June 4. This went to all of the conferees.

I think it was received by us in Michigan on September 12, 1968, and it reads that: "A five-State committee shall be formed to report to the conferees sixty days from issuance of this progress meeting summary on recommendations for uniform regulations to control wastes from watercraft. The Federal Water Pollution Control Administration shall provide clerical staff and an advisor. The committee shall be chaired by a State committee member."

I bring this to your attention here for the purpose of having consideration given by the conferees on what is -- what action is to be taken at least by the conferees here on this conclusion and recommendation which we previously agreed to. So far as I know, or perhaps this is the time to set up the committee, Mr. Chairman and members of the conference, to get to work on this because time is beginning to run.

If we use September 10 for the date of the issuance of the summary, we have sixty days to come up with a report to the conferees, which would make it December 10 -- somewhere around there.

MR. STEIN: As I heard that, I think that is a good suggestion. It says one of the States will provide a chairman, is that correct?

MR. OEMING: It says the committee shall be chaired by a State committee member.

MR. STEIN: You know if we read that and try not too technically to give it its meaning, I think they mean one of the State people is to be chairman.

Does Michigan want to assume the chairmanship?

MR. OEMING: Not necessarily, but it would if its arm was twisted.

MR. METZLER: Twist its arm!

MR. STEIN: I sense a consensus here that if Michigan will assume the chairmanship of that committee, Mr. Poston will provide the technical assistance, as it says -- the clerical assistance -- is that correct?

MR. POSTON: I will if that is requested.

MR. STEIN: All right, well, it is requested.

Now, do you want to name your conferees, your technical committee now or not?

MR. OEMING: I would like to have your views on that, Mr. Chairman. Perhaps it would be more appropriate if you appointed the members or canvassed the rest of the conferees for membership and let it go at that.

MR. STEIN: Are we ready to do that now?

MR. OEMING: I am happy to.

MR. STEIN: Who would you name as your chairman?

MR. OEMING: Who would I name?

MR. STEIN: Yes.

MR. OEMING: I thought you told me I was chairman.

MR. STEIN: Surely. I didn't know if you wanted to be chairman or someone on your staff.

MR. OEMING: Do I have to tell you that now?

MR. STEIN: No.

MR. OEMING: I will assume the responsibility for providing a chairman.

MR. STEIN: Providing a chairman?

MR. OEMING: Yes.

MR. STEIN: Before we leave here, let's put it this way: If Mr. Poston will make arrangements -- and the other conferees -- with Mr. Oeming for possibly the first organizational meeting of this group, we will provide or make arrangements for the meeting room and the clerical staff. Also, either give Mr. Oeming the names of your members of the committee before you leave here or give Mr. Oeming the names of the committee by next week at the latest.

MR. OEMING: That is fine.

MR. STEIN: All right.

MR. OEMING: That is fine.

MR. STEIN: Now, may I make a suggestion on this? When Mr. Poston names the Federal clerical staff or our member here, I would think it may be wise, if we are going to do the paper work, to ask for copies of names of the members of the committee to be given to Mr. Poston's office as well as Mr. Oeming so the notices can be sent out and we can get started.

Is that agreeable?

MR. OEMING: Agreeable.

MR. STEIN: All right. Thank you very much.

MR. METZLER: May I ask a question, Mr. Chairman?

MR. STEIN: Yes.

MR. METZLER: How does this relate -- let's go off the record for a minute.

(Discussion off the record.)

MR. STEIN: If there is agreement, we hope that this can be solved in a meeting or two. However, we did discover in Lake Michigan that it was important for the Lake Michigan States to get together and iron this out. Now, again, I am talking on the basis of experience on this. When we thought we had agreement among the States and we got down to the specifics, we found there weren't any differences really in philosophy. There were certainly great differences in the specifics and we did come up with specifics. That is why I would like to point out one thing, and I have had this experience many, many times, that when you talk generally about something, such as I remember when we prepared the Suggested State Water Pollution Control Act we never could get any response. When we first prepared that Suggested Act and sent it out and got out specific language, we got over a thousand letters of criticism.

Now, this is what has happened with our boat requirement in Lake Michigan. As long as we were talking generally, everyone was happy. When we got specific in the Lake Michigan Conference, I have never seen a more crowded or acrimonious conference session on any issue -- on any issue -- than we had then and there really was no difference from the States.

Now, I do think that if you come up with this requirement, I think this has the value of also getting the views of the people put in, so you will know where you stand, including the staff. If we are in agreement, I am ready to go after one meeting, and I hope we are in agreement on this.

Yes, Mr. Miller.

MR. MILLER: Perry Miller, Indiana.

Mr. Chairman, Indiana has some doubts about participating in this committee since we do not border on Lake Erie, and then also that we participated in the agreement that was reached on Lake Michigan, and as the result of the Lake Michigan work and the agreement of the States there, we have proposed amendments to our law in Indiana so that we will be in compliance with the agreements reached on Lake Michigan, so for this reason, we have some question about participating in this committee on Lake Erie.

MR. STEIN: I think you have a point in that you don't directly abut the lake. But may I suggest this? Perhaps, you can find your way clear to do this. Since you people have been through this and have the problems, if you could sit in at least at the first meeting with them and indicate what your experience has been because Indiana has been through this and has met the various issues, I think it may be helpful.

MR. MILLER: I might say on that, Murray, that we did it with one meeting in Lake Michigan.

MR. STEIN: Right, and I hope we can do it the same way.

MR. METZLER: At least two of the States around this table have already committed themselves irrevocably to this, so that whatever a committee is going to do is going to be kind of academic. I think maybe -- it seems to me that the decision has been pretty well passed, and so I wondered whether this committee could really serve a useful purpose.

It seems to me the conferees, at this point, if they had a document in front of them which summarized what Indiana, Michigan and New York already are committed to do, we might be able to agree on it without a lot of extra committee activity.

MR. STEIN: I think this very well may take one meeting, and I think since we do have that recommendation, let's see if we can possibly invest in just one meeting.

Are there any other items to be taken up before we get to the nutrient problem?

If not, before we go into it, let me indicate the historical status as I have seen it.

The Lake Erie Conference in 1965 was the first one really to recognize the phosphate or the control of the nutrient problem in a massive Federal-State action such as we have had here. They have come up with a policy on this that this was really a historical occasion, since it broke through -- I don't think there has been a major pollution control case since that has not taken up this problem.

I do think that in a place like Lake Michigan we have come up with numbers and come up with a specific program. We still do not have that in Lake Erie. I would suspect that the nutrient problem is acute in as many, many

Murray Stein

places as at Lake Erie, possibly no place more than Lake Erie, and certainly this is the largest expanse of fresh water that is used as a water supply where we have the problem, and I would hope that this meeting could come to grips with the problem.

We have had various meetings on this. I think we are at the stage now -- I think one of the conferees said this -- we have to fish or cut bait. The time for decision, I think, is here, because possibly any more meetings or more conferences after this will just result in people staying with stated positions and modifying them very slightly.

I think this is a very crucial issue at this time, and in the judgment of most people here, eutrophication is the major problem in the pollution control program of Lake Erie. The control of nutrients seems to be the most significant way of getting at that, and I think it is fair to say that we are dealing with the key problem in controlling pollution of Lake Erie, and I don't know if we are going for the jugular or not, but I think this is where the crunch comes in.

Mr. Oeming, may we call on you? Do you want to start with a statement on this or not? Do you have a statement?

STATEMENT OF LORING F. OEMING,
EXECUTIVE SECRETARY, MICHIGAN
WATER RESOURCES COMMISSION

MR. OEMING: I don't have any statement, Mr. Chairman. I think I expressed --

MR. STEIN: Do you want this in the record? (Indicating)

MR. OEMING: No, not necessarily. I expressed the program of Michigan -- described it at the last meeting of the conferees, where requirements have been established and time schedule has been established for the removal of phosphorous compounds from the discharges to Lake Erie, and we are on that program on the way. That is all I have to say.

MR. STEIN: Well, for the purpose of the record, do you want to state what percentage of phosphates you are going for?

MR. OEMING: We are requiring 80 percent removal of phosphates that reach the treatment facility in the raw. The raw phosphate content -- 80 percent removal.

MR. STEIN: And the time schedule is consistent with the time schedule established by the conferees?

MR. OEMING: Yes, it is.

MR. STEIN: And you are on schedule?

MR. OEMING: Yes, sir, everything is on schedule.

MR. STEIN: Yes, Mr. Miller.

STATEMENT OF PERRY MILLER,
ASSISTANT DIRECTOR, DIVISION
OF SANITARY ENGINEERING,
INDIANA STATE BOARD OF HEALTH,
INDIANAPOLIS, INDIANA

MR. MILLER: Mr. Chairman, Indiana, as you know, is a party to the Lake Michigan agreement of 80 percent removal of phosphates, and we believe that the same should apply in the Lake Erie Basin as an 80 percent removal of the significant amounts of phosphate from Indiana, and I could say that our treatment schedules are on the time table that has been established.

MR. STEIN: All right.

Mr. Poston.

STATEMENT OF H. W. POSTON, CONFEREE AND
ACTING REGIONAL DIRECTOR, GREAT LAKES
REGION, FEDERAL WATER POLLUTION CONTROL
ADMINISTRATION, DEPARTMENT OF THE INTERIOR
CHICAGO, ILLINOIS

H. W. Poston

MR. POSTON: Well, Mr. Chairman, I think you have been very eloquent in laying out this problem of phosphates, but I would like to repeat some of the things that you have said here and the way I feel about phosphate removal.

First off, I think it is very commendable, in some cases, in the progress that has been made towards trying to meet the requirements of this conference, and particularly the major works that are going on in the Detroit area, which admittedly is one of the big concentrations of population, big concentrations of waste, and they are making progress, and, as Mr. Oeming has just indicated, they are on schedule.

I am not quite so optimistic in some other areas, but, as you indicated, I think that eutrophication in Lake Erie is our big problem and we have recognized this repeatedly at our meetings. We have appointed a technical committee to study this problem. We have called for and heard experts, and they have indicated that this is our problem, and that there are adequate ways and ample means by which this problem can be eliminated.

I think, in the case of Detroit, they have already set up experimental works and are proceeding on getting a design.

H. W. Poston

I also would remind you that as time goes on and as we get into the pollution problem more and more, we are continually upgrading our environment and by doing this, at the same time, we ask for increased waste treatment from our municipalities and from our industries, and I think that we, as the conferees, should move ahead with our job, as we see it, and I have a proposal, as a statement of policy, which I might read as a start-off here.

As a statement of policy, the conferees would like to see all of the phosphorus removed from municipal and industrial sources and reduced to the lowest extent possible from all other sources such as agricultural and urban runoff. Phosphorus reduction is vital to arresting the over-enrichment of Lake Erie. Most of the phosphorus reaching the lake originates in municipal wastes and is reasonably controllable through today's technology. Established processes can achieve at least 80 percent reduction of phosphorus on a day-to-day basis. Higher levels of removal can be achieved through controlled operation and other techniques that can be applied today. Agricultural and urban runoff is relatively uncontrollable at this time, and the industrial contribution of phosphorus is small. Therefore, the conferees recommend that municipalities and industries reduce phosphates in waste by a minimum of

80 percent by 1971 and an average of 90 percent by 1973. Earlier completion dates now in effect shall prevail. Any exceptions will be considered by the conferees on a case-by-case basis.

MR. STEIN: Are there any comments or questions?

If not, I would like to take this opportunity for myself to make a statement and this is possibly started or prompted by the Michigan press release, Mr. Oeming.

MR. OEMING: I am sorry. I was trying to catch up on what --

MR. STEIN: I know. I just really read your press release and am prompted to make a statement based on that.

At least from my experience in this, and I have been in this, I think, from the beginning with Michigan, we have had full cooperation from Michigan in the cleanup of pollution. The record is very clear. We were asked in -- that is the Federal Government was asked to come in on an enforcement action on the Detroit River long before we had the Lake Erie Enforcement Conference, and this was done voluntarily by the Governor. Once we had that request under the Federal law, we had to come in. So, Michigan actually invited us in and started this whole operation.

Murray Stein

Secondly, I would say that as far as I can see that in the complicated municipal, industrial Detroit area, which is as complicated as any in the country, we have been moving forward with an abatement problem or control of the water pollution problem as fast as the art will permit us, as fast as you can reasonably expect to operate under our present form of government and the laws that we have -- Federal, State and local.

We have had many differences, not with the State, but possibly with the cities and the industries involved. But once these have been ironed out -- and I think in the Detroit area they have all been ironed out -- once they have been ironed out, we have had full cooperation from the municipalities and industries.

In any event, we never had any problem with data or getting the information out. Particularly, I think I would like to commend the attitude and the position of Detroit. There were many honest differences of opinion between Detroit and Michigan and the Federal Government, and again Michigan and the Federal Government have worked together on this.

But once Detroit embarked on its program, they have moved ahead expeditiously. They have fully cooperated and they have done everything possible to attempt to clean up pollution within the time schedule indicated. As a matter of fact, as Mr. Poston points out, additional requirements come to the fore. When we first started this program on the Detroit River alone, we weren't really thinking in terms of phosphate removal. This was an added starter, and when the added starter came on, Detroit took that on and folded it into its program. I would say that -- and this isn't in derogation to any other of the State programs here -- but I would say that as far as the Michigan program is concerned and the waters covered by this action that we have had full cooperation and steady progress toward abatement. I would like that point made at least from our point of view or our experience.

MR. OEMING: Thank you, Mr. Chairman.

MR. STEIN: May we call on Ohio, please?

MR. METZLER: Mr. Chairman, is it possible to question Mr. Poston here? Is it appropriate?

MR. STEIN: Yes, yes, right now.

MR. METZLER: Well, I was interested -- he suggested 80 percent phosphate removal by 1971, and 90 percent by 1973, and I wonder if he would tell me what is required in the way of additional facilities to get from the 80 to the 90 percent so I can see why it takes two years to do this.

MR. POSTON: Well, I think that -- it is my understanding that to go from 80 to 90 percent in the chemical treatment, it requires simply additional chemicals and that the additional chemicals will accomplish maybe up to 95 percent.

MR. METZLER: So, actually, then the only benefit that you would get from delaying moving to the higher degree for two years would be you would save the cost of some chemicals for a couple of years. That was the way it looked to me and I don't see how we could get in that kind of a position.

MR. STEIN: Let me try to answer this. I have asked those questions over and over again, Mr. Metzler.

Here is the way I understand this: The scientists tell us that if you are going to provide a chemical flocculation or precipitation method of removal and you ask for 80 percent, if you use the proper amount of chemicals and you do this right, you can't help getting 90; you would get 90. However, when they are very closely questioned, as administrators in a new field -- and this is a new field -- the question that I asked was if you were put in charge of a plant right now, could you guarantee, given all of the chemicals and all of the facilities in the world, that you were going to produce

90 percent reduction every day of the week? And I don't mean that on an experimental plant, where we load the place with technicians and Ph.D.s and research assistants and people going in white coats, but on a real practical day-to-day basis, could you remove 90 percent every day? They get a little hesitant.

The notion here, as I see this, is because this is a new field whether it is reasonable to ask for 80 percent now, given the varying areas of operation. Maybe we should ask for it. I would hope that what the scientists can do in their pilot plants for the special operations can be achieved in normal operation in the plants as quickly as it can. But I am not quite sure it can be done now.

Let me give you one analogy on this now and that is this: We have heard for years that a properly operated activated sludge plant can give you 90 percent B.O.D. removal or a properly operated trickling filter can give you 85. This is fine. How many of them really get up to that and how many don't? Now, the answer is: With chemicals, it is a lot easier to achieve these precise results.

Again, in trying to be fair about this and as administrators in a new field, I don't know whether we can expect to achieve that kind of treatment without that kind of effort, and I think this is the thing you have to look at.

MR. METZLER: I have two additional questions, if I might ask them. The first is: Does this assume, then, that we will have secondary treatment in all of these sources by 1971?

MR. POSTON: I would say yes.

MR. OEMING: May I comment on that?

MR. STEIN: Yes.

MR. OEMING: Not necessarily.

If you are aiming at phosphate removal, you can remove 80 percent phosphate removal without secondary treatment.

MR. POSTON: Well, I would say that there is a requirement by the conference that there will be secondary treatment.

MR. STEIN: Here let me --

MR. POSTON: I don't think this wipes this out.

MR. OEMING: That is a different question.

MR. STEIN: That is a different question.

Again, as I see this, we have been through this many, many times, and Mr. Metzler is asking the appropriate question.

You may get a community that is a very small one, and the question is whether you are really going to get secondary treatment within the deadline. If you don't, this may be something that in the small communities the States and we may have to take up on an individual basis.

I do think that this 90 and 95 percent treatment that the scientists or technical people keep talking about assumes secondary treatment. I think if you would get a small community that for some reason could not make this that what Mr. Oeming says that you still could get 80 percent reduction in the phosphate removal without possibly that. All right? Is this a --

MR. OEMING: I am with you.

MR. STEIN: All right.

MR. METZLER: I didn't want an extended discussion. It was merely to aid my own understanding of the problem.

I have one other question, and I think it perhaps is of some importance to us. It seems to me perhaps a year and a half ago or perhaps longer, the Technical Advisory Committee to the conferees arrived at certain concentrations of phosphate loading in Lake Erie itself. As I recall, this was .015 mg/l for the central part of the lake and .025 for the western end of the lake. My question is: Do these percentages that Mr. Poston has recommended -- will they give us this kind of loading on the lake?

MR. STEIN: Mr. Poston.

MR. POSTON: It is my belief that if we obtain 90 percent removal of phosphates, that we will get down to this level of phosphate, and I would like to confirm that with Mr. Harlow.

Is this not right, George? Isn't this our calculation on this matter?

MR. HARLOW: Yes, but again, it is a very complicated picture, Dwight, to try to relate with a waste input in regard to phosphorus especially what resulting concentration you are going to get in the lake. That is because phosphorus is such a dynamic element. Sometimes it is soluble; sometimes it is total and you find both. Also we do not know the input into the lake from the sediments.

There is some speculation that if we were to remove all of the phosphorus from municipal inputs there would be places in the lake from, say, agricultural contributions where this level might be exceeded, but there is no real sure way to predict. We have calculated and I admit -- I think we discussed this at the last meeting how we did calculate it at the technical session we had in August -- how to meet this level that was proposed by the Nutrient Committee, and we came up with a level of

92 percent average basin-wide for the year. I will admit that you will not meet that criteria all of the time, and we still don't know what the input from the sediments are.

Does that answer your question?

MR. STEIN: Let me again -- because we answered this before, and as Mr. Metzler points out, this is a key question. When this came up, if we are talking in terms of the total control, and we have a very, very, very difficult problem here, we do not put all the wastes in Lake Erie on our side of the border. If you are talking in terms of meeting particular levels in the lake, you have to think in terms of what the Canadians are putting in, too.

They made certain assumptions on that 92 percent. Say 10 percent for the Canadians. As we pointed out, this is a little presumptious in doing these figures, without consulting the Canadians. I thank the Canadians for their forbearance on this because I suspect if we ever got their expression of opinion, they would make Mr. Oeming's press release or the Michigan press release sound like a love letter. I think this is well taken. We just can't sit here with the four American States and the Federal Government here and talk in these terms. I don't know that we are not a long way coming to this.

Now, the best way we can get at that, it seems to me, is to come up with some kind of reduction of phosphates. If we could come up with a percentage, fine, and that is what we are looking for.

I asked this question of the experts again and again, and here is what they have told me, and maybe you can confirm it: For every pound of phosphates we are going to keep out, we are really going to slow up that eutrophication process to keep it out.

In other words, it is not a lost operation or it won't do absolutely any good. There is a direct relationship with the pound of phosphates you put into that. Now, again, the notion is, and we are talking in terms of such vast amounts, if you are talking about an 80 or 90 percent reduction -- the notion is that if this is accomplished, we will see a material improvement in the lake.

Are both these things correct?

MR. HARLOW: This is true. That is what Fritz Bartsch brought up at the last technical session.

MR. STEIN: That this was the basis of the judgment. All right.

MR. POSTON: I would just emphasize that this is a problem that has been -- eutrophication or aging of the lake is a problem that has been creeping up on us, and it is here. We see the evidence. It isn't getting any better. I flew across the lake this summer a month or thereabouts ago and saw blooms in the central basin of the lake which, to my understanding, these hadn't been there before. I hadn't observed them before, and these were extensive in their coverage, and I would just emphasize that you are not going to lick this eutrophication problem with token efforts. It has got to be a giant effort that, if you go after it, you have just got to do everything you possibly can, and this is the only way you are going to make inroads into this problem which is admittedly a big one.

MR. STEIN: Are there any other questions or comments?

MR. OEMING: Well, yes, Mr. Chairman. I think Mr. Metzler has opened a good question here about this achieving 90 percent by 1973. I don't know whether we got to the issue or not, but if you will recall, gentlemen, when Dr. Stephan was on the stand at the last meeting, I think all of us questioned him pretty deeply on his ability to forecast, at the present time, that you could achieve 90 percent on a routine basis. If I interpret -- and I think I do -- it correctly -- because I listened very carefully to what he said about this 90 percent or 92 percent business -- if I interpret that correctly, I don't believe there is any assurance here -- there is sufficient assurance for these conferees to adopt anything above 80 percent at this time on a routine basis, with any date on it at this point in time.

I would further confirm this, Mr. Chairman, by the work that has been done in Michigan on small plants and on pilot plant work, and this pilot plant work is the size of a fairly good-sized community in which 80 percent removal is being achieved and sometimes over that. But extreme difficulty is being experienced in getting it up above 80 percent on a routine basis, and I don't think that any of us can afford to get our necks in a noose here on something that we cannot foresee at this time technologically or in the best opinion of the best Federal expert I know of in this business, Dr. Stephan.

MR. STEIN: Are there any other comments on that? Dr. Arnold.

DR. ARNOLD: We are ready to make a statement.

MR. STEIN: Yes, if you would go ahead.

Before you start, I have questioned Dr. Stephan and the staff not only here but in the office repeatedly on that and I can't take issue with you on that.

MR. OEMING: Okay.

MR. STEIN: Dr. Arnold.

George H. Eagle

DR. ARNOLD: Ohio does have a statement to make and this statement will be made by Mr. George Eagle on behalf of the Ohio Water Pollution Control Board.

Mr. Eagle.

STATEMENT OF GEORGE H. EAGLE,
CHIEF ENGINEER, OHIO DEPARTMENT
OF HEALTH, COLUMBUS, OHIO

MR. EAGLE: Mr. Chairman, conferees, ladies and gentlemen, my name is George H. Eagle. I am Chief Engineer of the Ohio Department of Health. The Division of Engineering serves as the technical staff of the Ohio Water Pollution Control Board. On behalf of the Board, I wish to submit this report in its entirety for the record.

I believe I distributed copies and gave one to the stenographer.

According to a letter received from the Chairman of this conference, Mr. Stein, under date of September 10, 1968, this meeting was called for the purpose of working out, if possible, a Federal-State agreement on nutrient limitations for discharges to the Lake Erie system. I submit we already have such an agreement in the form of the "Report of the Lake Erie Enforcement Conference

Technical Committee" which was approved by the conferees on June 1, 1967. You will recall that the Technical Committee did considerable investigation and spent considerable time in developing the recommendations and conclusions in this report. In brief, they recommended total phosphate as P and inorganic nitrogen as N limits of 0.025 and 0.3 mg/l, respectively, in the western basin and along the south shoreline of Lake Erie, and limits of 0.015 mg/l total P and 0.3 mg/l inorganic N in the central and eastern basins. These were just discussed here a few minutes ago.

This, then, is to report Ohio's progress in meeting the objectives set forth in the Technical Committee's recommendations. I already reported this in a general way at the June 4th meeting. Now it appears a more detailed report is desired.

First, a few general remarks.

The State of Ohio has been a recognized leader in the field of treatment of municipal and industrial wastes for many years. Of the approximate 4.0 million people who live in the Ohio portion of the Lake Erie drainage basin, about 80 percent or 3.2 million people reside in areas served by public sewers. In turn, some 80 percent of the wastes collected by these public sewers is provided at least secondary treatment. As has been previously reported to the conferees, the Ohio Water Pollution Control Board has an established policy of requiring at least secondary treatment of all organic wastes and comparable treatment for industrial wastes. Consequently, facilities are either now being constructed or plans are being drawn to expand plants providing lesser treatment to secondary or higher type treatment. Likewise, the few communities presently not providing any treatment, which is less than one percent of total, are being required to provide adequate secondary type plants.

The Ohio Department of Health and the Ohio Water Pollution Control Board has required all public wastewater treatment plants to chlorinate the plant effluents on a year around basis for protection of public water supplies and recreation waters. For plants along Lake Erie, this requirement is being met almost 100 percent at this time.

Other problems such as combined sewer overflows, separation of storm and sanitary sewers where feasible, elimination of stormwaters and land drainage from sanitary sewers, by-passing, spillages, etc., are being solved. And, believe me, in many communities, these are quite formidable problems. Their solution is costing a lot of money. Ohio believes, however, these matters to be of primary importance to adequate wastewater treatment for protection of the receiving waters.

Now, as to phosphate removal plans and programs.

Under date of March 28, 1968, the Division of Engineering, Ohio Department of Health, advised municipal officials, consulting engineers and others that plans submitted for approval for municipal waste treatment plants must incorporate facilities for phosphate reduction. A copy of this memorandum is attached (Exhibit A).

Attached is a table (Exhibit B) of sixteen municipalities in the Lake Erie Basin that have facilities for phosphate removal in operation or under design. Fifteen of the sixteen plants are under orders to be completed and in operation by the end of 1970. The remaining one, Cleveland Westerly, is scheduled to be completed by 1972.

I would like to turn to that table, which is the last page of this report and just make a few brief comments on it.

We note that we have these sixteen municipalities listed here, ranging all of the way in size from a minimum of 1.5 M.G.D. up to 120 M.G.D.; that one of them, the Cleveland Easterly, is in operation. Admittedly this was not particularly designed for phosphate removal but is, at this time, taking up better than 50 percent of the phosphates with polymers type treatment.

The other installations which are under design and study have been estimated to remove in the neighborhood of -- most of them -- around 90 percent of the total phosphates. A few of them are lower. You will notice a couple of them there at 80 percent -- Lake County, Toledo, and Akron, where it is only 50 percent at this time. This doesn't mean that it can't be advanced in the future. But I point this out to show that these proposals are under consideration or are, in effect, in progress at this time.

MR. STEIN: Mr. Eagle, I think this is a key question. Do you mind?

MR. EAGLE: No, I don't mind.

MR. STEIN: This is just for information.

MR. EAGLE: Yes, sir.

MR. STEIN: I think I can recognize the Cleveland Easterly plant that is in operation, and you have been using polymers and only getting 50 percent.

Do you have a prognosis of how much that might be increased to or do you intend to increase it?

MR. EAGLE: I have some comments in this report later on this matter.

MR. STEIN: All right. And if you have them on this other one that I raise, and that is with the Akron plant with the 50 percent removal, expected completion date 1970 -- why is that being --

MR. EAGLE: Here again, this matter is still under study. But with this Zimpro process which has been designed, we have detail plans designed for this, and this will remove, they estimate, around 50 percent of the phosphates. But this was not basically designed for phosphate removal.

MR. STEIN: I understand that.

I just raised this as a question. Your total listing looks really excellent where it lists 80 and 90 percent reduction. And I can understand where you have a plant presently in operation, such as Cleveland Easterly plant. I think you might want to give a little explanation about a plant that is not expected to be completed until 1970 and is still so much lower than the others.

MR. EAGLE: Well, that is because these are specifically designed for phosphate removal.

MR. STEIN: Well, the question here, since this is still away in 1970, whether features in the Akron plant can't be folded in, where it isn't timely to possibly bring that up to the other level.

George H. Eagle

MR. POSTON: Mr. Chairman, I think this really emphasizes the difference between 50 and 90 percent -- the reason that we need to come to some agreement on what we mean by maximizing phosphate removal.

In this case, it appears that 50 percent or 90 percent would be maximizing.

MR. EAGLE: Well, as far as Ohio is concerned, we are talking about total loadings, and this table shows this reduction in total loading to the extent that 16.7 thousand gallons or pounds, at this time -- and that either it is in operation or under design -- and that is the primary purpose of this table, in addition to listing the places that are actively working on this problem.

If I may go on, please.

MR. STEIN: Yes, please.

MR. EAGLE: The Technical Committee Report attributes to Ohio municipal and industrial sources about 40,000 lbs./day of the total estimated 152,000 lbs./day total phospate (P) discharged to Lake Erie. In order to meet the recommended objectives of 0.025 mg/l and 0.015 mg/l of phosphates (P) in various parts of the lake, an overall reduction -- and Mr. Harlow just mentioned this -- of more than 92 percent in municipal and industrial contributions will be required according to the data in the report. Due to heavier contributions and lesser quantities of water in the western basin, higher reductions will be necessary to meet the 0.025 mg/l phosphate (P) level objective in this western basin.

From the table again (Exhibit B) you will note that some type of phosphate removal facility is proposed for 445 M.G.D. of the approximately 600 M.G.D. of domestic wastes discharged to Lake Erie and the Ohio tributaries. These proposed facilities when completed and placed in operation are expected to remove some 16,700 lbs./day of the total phosphates (P). In addition, the existing secondary treatment plants are estimated to be removing about 20 percent of the total phosphates (P) or about 2,000 lbs./day making a total of 18,700 lbs./day removal by existing and presently proposed installations. This represents about 47 percent of Ohio's total estimated contribution from municipal and industrial sources.

Plans for several more municipal wastewater treatment facilities are under preparation. These plans will include phosphate removal facilities and will reduce phosphate contributions when completed by another ten to fifteen percent.

With regard to existing installations, I would like to include in this report a few excerpts from the recent Cleveland Master Plan Report prepared by Havens and Emerson, consulting engineers.

"We recommend that Cleveland undertake immediately an interim program aimed at improving nutrient removals by utilizing existing facilities, and at the same time conducting a substantial pilot plant program at Easterly and Southerly to determine the optimum ultimate method to be employed for nutrient removal. The specific items recommended for immediate action are:

"1. Take steps to increase air supply to the activated sludge systems at Easterly and Southerly and incorporate such capacity into the design at Westerly.

"2. Alter the existing final settling tank collectors to provide rapid sludge removal.

"3. Commence chemical precipitation treatment of supernatant liquor at Southerly using facilities provided in the remodeled secondary digesters, for reduction of phosphorus from this source. Based upon initial results, expand chemical feed facilities to treat all of the recycle liquors.

"4. Commence pilot plant operation at Easterly for phosphorus removal using the combined biological-chemical process proposed by Barth. Various coagulants might be used, but primary efforts should be centered around use of alum with lime, or sodium aluminate. If this process is successful, expand its use to full plant scale and undertake the same program at Southerly.

"5. Immediately undertake design, construction and operation of a 3 mgd pilot plant arranged with flexibility to demonstrate the feasibility and cost of other processes for both phosphorus and nitrogen removal.

"6. Undertake controlled tests on the existing full scale plants to determine optimum mixed liquor solids concentration for nutrient removal."

I cite this proposed program as typical of the approaches to nutrient removal being considered by many of the municipalities in Ohio.

Mr. Stein, does this perhaps answer your questions in part?

MR. POSTON: When did this Havens and Emerson report come out, Mr. Eagle?

MR. EAGLE: You will recall it was presented here for the first time, I believe, at the June 4 meeting. This is the $211 million proposed program for the city of Cleveland.

MR. POSTON: Then, the next question I would have is: Has anything been done towards going ahead and providing pilot plant work for determination of the best phosphate removal?

MR. EAGLE: I believe this is contingent or partially contingent on approval of the $100 million bond issue that is being submitted to the voters here in November and this is part of the package, part of the $100 million package.

MR. POSTON: There is some contrast here between this kind of action and the action that we see in Detroit, the action we see in the Buffalo area, where phosphate removal plans are rapidly moving ahead and decisions are in the process --

MR. EAGLE: Wait a minute, Mr. Poston.

Plans are moving ahead for new secondary facility at Westerly, including phosphate removal. We are not going to wait. I don't think Havens and Emerson meant to wait for a study of this pilot plant for several years before they proceed with construction. They think they are going to try to build sufficient flexibility into their new and improved facilities so that they can use various combinations, and so on. I think this is the push.

MR. STEIN: I think, as you read this, Mr. Eagle, we are really very close together on this. I don't see much difference, do you?

MR. EAGLE: Well, I don't know what you mean by that.

MR. STEIN: Well, what I mean by that is plant-by-plant you are getting up to 80 or 90 percent. If we are talking about a few plants, we can take these plants up one at a time, but as long as you keep pushing them up to 80 and 90 percent I don't see much difference between you and Mr. Poston.

Go on.

MR. EAGLE: Well, we will talk about that later.

MR. STEIN: All right.

MR. EAGLE: You will recall at the June 4 meeting, I asked for sufficient time to investigate and consult with public officials and engineers on the possibilities of developing specific programs for phosphate removal in the entire Lake Erie Basin, at existing as well as new or improved secondary wastewater treatment facilities. We have not been able to do this for the more than 50 major facilities in the basin. Not to take anything away from the other States at all, but in Ohio we are talking about considerably more installations than we are in the other States. There are relatively few separate installations in the other States, and in Ohio there are some 50 major facilities and way over 100 total facilities. Now, of course, you know that four months time is just not enough to get into all of the details.

George H. Eagle

I -- meaning we here -- have appointed an ad hoc Advisory Committee on Algae Control in Lake Erie. This committee is composed of representatives of municipalities, industries, consulting engineers, State and Federal officials, as well as knowledgeable technical people. The committee was charged with: (1) assembling all pertinent information with respect to algae control in Lake Erie and its tributaries; and, (2) after due deliberation, to recommend to the Ohio Department of Health programs for adequate algae control. This committee has met twice and posed many questions most of which have not been satisfactorily answered.

The following subcommittees have been appointed:

(1) Research and Demonstration -- To develop recommendations for a demonstration project for determining effect of wastewater treatment plant effluents on algal growths in Lake Erie waters, to be worked out in somewhat controlled conditions.

(2) Surveillance -- To recommend adequate surveillance programs in Lake Erie.

(3) Agricultural Drainage -- To recommend programs that can be implemented and promoted by Federal, State and local agencies to reduce nutrients from this source.

George H. Eagle

(4) Treatment Facilities -- To assemble all information available with respect to means and methods presently available for phosphate removal.

This committee and staff propose to hold seminars for municipal officials and consulting engineers to advise them of the alternatives in removal of phosphate, the costs involved and the probable results, following which the respective municipalities will be required to submit their plans and programs for phosphate removal to the department for approval.

Now, you can recognize that this is primarily directed toward existing installations where certain improvements and modifications of their existing facilities need to be made for phosphate removal.

The Advisory Committee developed a series of questions with respect to algae control in Lake Erie. These questions were submitted to the FWPCA and were answered mostly from an academic standpoint at a meeting of the conferees in Cleveland on July 26, 1968.

The answers left many questions in the minds of the members of the Advisory Committee and the staff. Some of these are:

(1) There appears to be no factual data available as to the levels of nutrients (phosphorus and nitrogen) required for snigifcant algal blooms.

George H. Eagle

(2) There is no factual information available as to what may be the triggering agent for algal blooms.

(3) There is incomplete data available as to physical factors which may or may not contribute to algal blooms or their control.

(4) Why has not a continuing monitoring program been established in Lake Erie to show the relationship between nutrient levels and algal blooms?

(5) What programs are proposed for reduction of runoff of nutrients from agricultural lands?

The committee, the Water Pollution Control Board and the staff have many, many more questions, but are willing -- I want to emphasize this -- to proceed to do everything reasonably possible to remove phosphates from wastewaters on the assumption that it may do some good in Lake Erie. An additional benefit, of course, will be better overall wastewater treatment.

Ohio will continue to pursue the program for phosphate removal in accordance with the objectives recommended by the Technical Committee and accepted by these conferees. You may be assured that the objectives set forth by the Technical Committee will be met by Ohio by no later than 1972, if at all possible to do so. Within the next six months, we should be able to make a complete report on the phosphate removal programs to be undertaken by all the major contributors in the Lake Erie Basin.

In conclusion, we -- speaking for the Board -- would like to recommend the following to the conferees for their consideration. These recommendations, hopefully, will supply some of the answers to the many questions concerning the control of nuisance algae in Lake Erie.

1. Provide detailed and continuous monitoring in areas where blooms do and do not occur to determine whether a triggering agent (nutrients or some other of the many possible causes) can be defined.

2. Maintain a flow pattern survey to trace influence of the shore and tributary discharges to determine their relationship to areas of bloom and no-bloom.

3. Provide a control area in the receiving lake at two or more sites of municipal plant discharges so as to determine whether and under what conditions the blooms appear after various types of treatment.

4. Where shore algae conditions develop, provide demonstration projects which would permit appraisal of deep water dispersal of effluent discharges. We think this may have a lot of promise.

In a few weeks, it should be possible for Ohio's

Advisory Committee to spell out in more detail these suggested recommendations. Also, the committee hopes in the near future to have specific recommendations on reduction of runoff of nutrients from agricultural lands.

Thank you very much.

(The exhibits referred to in Mr. Eagle's report follow:)

EXHIBIT A

TO: City Officials, Consulting Engineers and Other Interested Persons
FROM: George H. Eagle, Chief Engineer, Ohio Department of Health
SUBJECT: Removal of Phosphates from Waste Waters

At the August 3-12, 1965, conference on pollution of Lake Erie, it was agreed upon by bordering States and Federal Water Pollution Control Authorities that municipal wastes be given secondary treatment and that "secondary treatment plants be so designed and operated as to maximize the removal of phosphates" in the Lake Erie Drainage Basin. Further, the water quality standard adopted by the Ohio Water Pollution Control Board for other basins throughout the state require supplemental treatment of wastewaters to the fullest extent consistent with current research and technological advances where necessary to reduce algae growths.

Subsequent to these requirements and agreements, municipalities were ordered by the Ohio Water Pollution Control Board to prepare general plans of wastewater treatment facilities for compliance. Most of the major municipalities complied with this order by employing consulting engineers to prepare general plans of the necessary improvements.

It soon became evident that very little was known about treatment for phosphates removal by either the consulting engineers or the state and federal agencies. As a result, general plans of wastewater treatment facilities submitted for approval and approved by this department practically ignored the matter of phosphate removal other than to state phosphate treatment facilities were being deferred until more was known about the matter.

Information furnished by the Federal Water Pollution Control Administration indicates there is a method by which phosphates can be removed at a low capital cost. This method involves the addition of sodium aluminate to the aeration tanks. It is reported the phosphate precipitates formed by the addition of sodium aluminate will not go back into solution or interfere with the disposal of sludge. It is also reported that the addition of this chemical will improve suspended solids removal in the final settling tanks and thus also improve the BOD removal efficiency of the plant. Other methods involving high capital costs have also been demonstrated to function satisfactorily.

It is recognized that the sodium aluminate phosphate removal process involves a high operation cost and it is hoped some other less expensive process will be developed before long. We cannot, however, continue to ignore the phosphate problem with the hope that some better process will develop at some future date. Future plans, both general and detail, of treatment plant improvements submitted to this department for approval will have to make some provision for phosphate treatment. At the present time, we do not know of any treatment process involving less capital cost than the sodium aluminate process.

March 28, 1968

EXHIBIT B

MUNICIPAL FACILITIES PLANNED, UNDER CONSTRUCTION OR IN OPERATION FOR PHOSPHATE REDUCTION

Municipality	Treatment Type	Plans		Design Flow M.G.D.	Expected Phosphate Removal (P)		Expected Completion Date
		Detail	General		%	lbs. Per Day	
Akron	**	+		87.5	50	2,380	1970
Ashtabula	Chemical	+		12.0	90	586	1970
Bedford	Chemical		+	3.2	90	156	1969
Bedford Heights	Chemical		+	3.6	90	176	1969
Cleveland Easterly	Polymers	-	-	120.0	50	3,260	In operation
Cleveland Westerly	Chemical		+	40.0	90	1,955	1972
Conneaut	Chemical		+	2.93	90	143	1970
Defiance	Chemical	+		4.0	90	196	1969
Euclid	Chemical		+	22.0	90	1,075	1970
Lake County	Chemical			4.0	80	173	1969
North Olmsted	Chemical		+	6.0	90	293	1969
Port Clinton	Chemical	+		1.5	90	73	1969
Lorain	Chemical	+		15.0	90	734	1970
Rocky River	***		+	9.33	90	456	1969
Sandusky	Chemical		+	12.4	90	606	1970
Toledo	Chemical		+	102.0	80	4,440	1969
				445 M.G.D.		16,702	

* Estimated removal based on 20 ppm phosphates as P in raw sewage.
** High pressure wet oxidation (Zimpro process) for waste activated sludge.
*** Activated carbon filter secondary treatment facilities.

MR. STEIN: Thank you, Mr. Eagle.

Before we throw this open for questioning, I have got one -- I think one clarifying operation here.

You have a proposal for monitoring and flow surveys and material of that kind. I take it since you are going to get more detail that you don't have a cost analysis of this.

MR. EAGLE: No.

MR. STEIN: No. Now, this is the question: Do you expect the Federal Government or the State to do it? If you expect the Federal people to do it, it would be very helpful if I could get at least a ball park estimate of the cost to see if I could afford it out of the enforcement funds or if we have to go somewhere else.

MR. EAGLE: Well, I think Mr. Harlow should be able to give you some ball park figures in this area.

MR. STEIN: May I make just one suggestion? This is just for clarification. At least I have no quarrel, and I would like to hear from the conferees on an action in this direction, but you say it should be possible for Ohio's Advisory Committee to spell out in more detail these suggested recommendations. If this is going to be a joint Federal-State project, or if the other States are going to participate and we are going to have to get some money up, it might not be too early to bring the other people in to work up the details. As you know, with this, Mr. Eagle, the key point in getting any of these programs off the ground is the appropriate way -- we are going to check them and see where we are going to get the money. I think unless we get the States folded in as early as possible with the Federal Government, we may be in for some kind of delays on this.

MR. EAGLE: Well, these, of course, will still be recommendations, and you might be interested to know that the FWPCA is represented on our Advisory Committee.

MR. STEIN: But we have a question here with the other States, too. You see you have provided a control area in the receiving lake of two or more sites. Those are in Ohio, I assume.

MR. EAGLE: Not necessarily.

MR. STEIN: You see, these are the points, and I think if we were to put in Federal money we would have to consider the views of the other States and where they wanted the survey to take place if we were to get any chance of doing this. So, my suggestion is: You may want to consider as soon as possible to broaden your representation if you are going to come up with a proposal.

MR. EAGLE: Well, I don't think this is my prerogative, is it, to do this? I think it is up to you as the chairman of the conferees. If you want a joint committee in these areas, then I think that is up to you.

MR. STEIN: All right, fine.

Are there any questions or comments on Mr. Eagle's report?

MR. METZLER: Well, probably this is not necessary, but it certainly is nice for those of us that are downlake to hear the kind of progress that both he and Larry Oeming are reporting for their two States. This is the most exciting thing that has happened lately.

MR. STEIN: Yes.

Go ahead, Mr. Poston.

MR. POSTON: I have some mixed emotions about this. I feel that I know that Mr. Eagle asked for time at the June conference, and I probably at least in part am responsible for setting this date of the fourth of October here for this meeting. But it was my understanding at the June meeting that within three to four months we would be ready to come to some agreement on the phosphate level removal, and I note in Mr. Eagle's report that he wants six more months, when he should be able to make a complete report on the phosphate removal programs.

Since this conference was started in 1965, it seems kind of a remote --

MR. EAGLE: Just a minute, Mr. Poston.

MR. POSTON: -- date here.

MR. EAGLE: The first time I heard anything mentioned about mandatory removal of phosphates was at the June 4 meeting. The Technical Committee report set up objectives which Ohio pursued, first, on the basis of new installations, and I reported on this. At the June 4 meeting, we very briefly discussed at a very late hour in the afternoon the possibility, or took under consideration the matter of setting up specific requirements for all waste discharges, all municipal waste discharges, primarily municipal, and this is the first time that I ever heard these conferees discuss this matter of mandatory removal of phosphates for all installations. So, I don't think it is unreasonable to ask for a few months time to try to work out plans for the some-over-100 municipal installations in the State of Ohio.

MR. POSTON: It is my recollection that our chairman here claimed that the Lake Erie Enforcement Conference set a landmark when they set maximized phosphate removal as one of the recommendations, and I feel that maximizing -- when we ask for maximizing phosphate removal it certainly means that we do more than go home and forget about it.

MR. EAGLE: Well, are you inferring that we went home and forgot about it?

MR. POSTON: Well, you said this was the first time you heard about it.

MR. EAGLE: Mandatory, mandatory, mandatory for all installations.

Following the conference, we immediately sent out a directive and had numerous meetings with our consulting engineers and municipal officials, and so on, in providing for phosphate facilities in new or improved waste treatment facilities where it would be possible to build it in at this time.

Now, it comes up on June 4 that we must go back to the existing facilities, many of which we have, and incorporate phosphate removal to the best of our ability in existing facilities.

As I say, this is the first I heard this discussed by these conferees was on June 4 that we must apply this to all facilities including existing ones.

MR. STEIN: Well, I hope -- let's try, Mr. Eagle, to see how close we can get together. I think we are very close here, and this is not a -- I wouldn't like to emphasize differences, and I do think that the program you have outlined is designed to meet what the conferees were looking for. I think it is fair to say that the whole problem of certainty in phosphate removal has been clarified within the past few years.

MR. EAGLE: I think you will glean from this report that Ohio feels that the proper approach is on loads. I don't know -- you talk about 80 percent, 90 percent -- are you talking about 80 percent or 90 percent of what? In the final analysis we are interested in loads to the lake, nutrient loads to the lake, and I think that this is the proper approach.

MR. STEIN: Do you have a comment on that, Mr. Poston?

MR. POSTON: Well, I am interested in loads to the lake, and I think Mr. Poole, at the last meeting, brought out that he had some small communities of 200 or 300 people, and they had just put in a plant, and he hesitated to go back to them and tell them that they had to start and rebuild this plant.

But I think in the suggestion that I made, or a statement to the conferees, I said any exceptions will be considered by the conferees on a case-by-case basis, and I think this could be handled in such a manner.

MR. EAGLE: On that basis, I have got about 50 exceptions I would like to present to you right now.

MR. STEIN: That might be all right. But I do think, Mr. Eagle, that the only thing we are dealing with in these percentages, isn't it, is an administrative tool to attempt to get at the problem. I think we are down to the issue where when we deal with plant by plant we are beginning to resolve this problem.

I have one general comment on the statement you have here, Mr. Eagle, and I really in a sense can sympathize with that, that is the questions of the committee. For example, on page 5, you say your committee has met twice and posed many questions presumably to themselves most of which have not been satisfactorily answered. Then, after the meeting we had on July 26, you said the answers left many questions in the minds of the members of the Advisory Committee and the staff and you go into those.

Now, the experience that I think any agency has with committees of this type -- and God bless them, I don't want to derogate them in any way -- but just to emphasize the point, when you get a bunch of researchers or professors working on a problem, I have never seen them come up where one of the major conclusions wasn't that further research is necessary. There are some questions that have to be answered. If we didn't have that kind of pressure from the researchers, of course, we would not refine our thinking and get this done. But I think, Mr. Eagle, in dealing with any of these problems, whether you are dealing with administration or you are dealing with an industry, there comes a time when you have to stop sharpening your criteria and go into production.

Now, in the industrial meetings I have had, whether it is in automobile, or steel, or paper mill, they have exactly the same problem with their staff. There comes a time when you figure that you have refined the problem enough, asked the questions enough, have the answers and you are going ahead with the solution.

I do think that your approach has hit a balance on this. I am sure you are going to come up with specifics on each one.

MR. EAGLE: Well, we feel that these matters should go forward at the same time. Certainly we want to know how effective we are being in the removal of these phosphates, if we are being effective at all, and what further things may or may not be causing these blooms. But I do point out that we are willing to go ahead and do everything possible for the reduction of phosphate loads and contributions to Lake Erie waters and we are proceeding, we think, very reasonably well in this regard.

MR. STEIN: Could I ask one last clarifying question? What difference is there that you see in what you talked about in the reduction of loads and a percentage reduction of phosphates? Aren't they about the same thing, or is there a difference between them?

MR. EAGLE: Well, I think you can certainly reduce the loads considerably by taking a good reduction, all of the reduction that you can reasonably get in the large installations. I presume this will come up for discussion later, but the problem comes up where these smaller installations -- say under a couple million gallons a day -- how much can they afford to do? How can they afford to operate them? Where do they get the technical personnel? How can they afford to get the technical personnel? We have these questions constantly in all of these endeavors.

I think you reach a point here where it may not be very practical to try to take 80 or 90 percent, or whatever, across the board for everyone.

MR. STEIN: Right. Well, I am very sympathetic with that approach, particularly with the small communities.

Let me check with Mr. Poston because I have heard this from Indiana and other States, and we recognise that this is a real problem.

The question that we are going to have here is: if you go for 80 or 90 percent -- or what kind of percent that you have -- with any reasonably sized installation, the recognition is that you are going to have small installations, that we are going to have to meet on a case-by-case basis. Is this the way you look at the problem or is there a rule on this 80 or 90 percent reduction that we apply all across the board?

MR. POSTON: Well, I certainly have thought about this for quite a time, and I have searched for some figure or number of people where you would start requiring 80 percent, and I find it very difficult, and I think that this should be the prerogative of the State agency concerned.

However, I think that their method of doing this should be available to the conferees. It should have somewhat uniformity across the line.

MR. EAGLE: Mr. Stein, I would just like to recite again that this report -- this technical committee report, in which a number of people spent a lot of hours -- very able people -- and came up with a very extensive set of conclusions and recommendations and objectives, we subscribe to these, and as I pointed out in my report we will do everything we can to meet these objectives in the way of limits as set up in this report.

Now, why do we have to come up with a whole new set of percentages or figures, or so on, made up somewhat off of the top of our heads, and not stick with what is contained in this report as the objectives of these conferees? This I don't understand.

MR. STEIN: Are there any comments on that?

If there are none --

MR. POSTON: I think that you would find that the technical committee report would require over 80 percent phosphate removal.

MR. EAGLE: Sure, I think it was around 92 theoretically are the calaculations. We have no quarrel with them. We are talking about loads now. We are not talking about individual treatment plants.

MR. STEIN: Here is a question that I have, and I think we face this constantly, Mr. Eagle, and I think I can attempt to try to answer you.

The technical committee report was a technical committee report. It did not translate itself into terms of treatment requirements for all plants. Now, in order to get Federal assistance, we are going to be faced with these problems, and probably your State legislators are going to have the same problem, whether they meet the comprehensive program and whether they meet the requirements of the standards or the enforcement operation.

Now, the question we have, as I see it: Unless we come up, as we have in other areas, and talk about percentages of removal or treatment, as we talk of primary and secondary treatment --

MR. EAGLE: Where did we do that?

MR. STEIN: Where did we do it? We talked in terms of secondary treatment for all of the municipal wastes.

MR. EAGLE: But you didn't put a percentage figure on it.

MR. STEIN: Because the percentage figure is fairly well known. The question in dealing with phosphate treatment is we don't have a descriptive term to indicate that. You can run all the way from 25 to 92 or 95 percent removal. The attempt is to get precisions so we know where we are standing. This does not mean that when you have some small communities where you are not going to make that, that we don't take these communities up on a case-by-case basis.

Now, we haven't heard from Pennsylvania yet but as I understand it there are three States here at least that have proceeded with this 80 percent program in their program, and while they may have a problem with a couple of small communities in one or two of the States, this is a reasonable way of working this, and something that the Federal people can understand, the State people can understand, the people who are watching the program can understand on making a judgment of what we do in each individual plant.

The other kind of arrangement is one in which you say you have an objective that you are going to do the best you can in each plant. This may vary in each plant and there may be differences as there always are between experts and people at different levels of government. Perhaps, when we come up with a requirement at each plant, the public which is watching us all will not have as accurate a yardstick to judge us by to see whether or not we are meeting this phosphate removal that is going to do the job.

I think if we talk in terms of an 80 percent removal and you are not going to get an 80 percent removal immediately, the red flag goes up and we have to have a pretty good explanation of why we are not doing it in that case. If you don't have that, you are dealing in a never-never-land and you are arguing each case individually. After awhile the public may lose us, and if they lose us, we are going to come up with a lot more stringent requirements.

MR. EAGLE: Yes, but we are getting back to the point of dictating treatment requirements without relationship to the water quality of the receiving waters. The technical committees set up a criteria for phosphates and nitrogen in the receiving waters of Lake Erie. I think that what we have got to focus on is meeting -- is trying to meet these criteria, and however we can best do that, then, is the proper way to proceed.

MR. STEIN: Right.

Mr. Eagle, I don't want this to be construed as engaging with you, but I thought that this 80 or 90 percent was directly related to this meeting the water quality criteria, that is why they came up with it.

MR. EAGLE: That has not been spelled out for me, that it is related. Thank you.

MR. STEIN: All right.

Mr. Boardman.

STATEMENT OF RICHARD BOARDMAN,
DIRECTOR, DIVISION OF WATER QUALITY,
PENNSYLVANIA DEPARTMENT OF HEALTH

MR. BOARDMAN: My name is Richard Boardman and I am Director of the Division of Water Quality of the Pennsylvania Department of Health. I am representing the Department of Health today.

At its September 18, 1968, meeting, the Pennsylvania Sanitary Water Board directed the Department of Health staff to inform the city of Erie that at least 80 percent phosphorus removal was required. This action was taken to prevent the joint city of Erie-Hammermill Paper Company project from being held up by the question of phosphorus removal. The value of 80 percent removal was used because it seemed to be the consensus of the majority of conferees at the August 1968 meeting that this should be the minimum value that should be established.

In addition to the Erie-Hammermill project, numerous public sewerage projects are under way in the Lake Erie Basin as a result of Pennsylvania's "Sewerage Facilities Act" and this vital planning could be delayed because of the uncertainty over phosphorus removal. Since no further delays can be tolerated, those doing the planning are being told that at least 80 percent phosphorus removal is required.

It is recognized that 80 percent phosphorus removal may not meet the water quality goals of the Technical Advisory Committee on the basis of straight dilution, but 80 percent seems to be the next logical step to take based on previous statements by the conferees. It is believed that these levels of reduction will help to stop the high rate of eutrophication in the lake. Additional work should be done to work out a long-term solution.

We believe that a model is needed for the lake in order to guide future plans for further waste load reduction. The model should include the physical, chemical and biological factors of assimilation and the economic factors of load reduction.

Work on this model should begin as soon as possible, and should be accompanied by a sampling program designed to supplement existing data needed for inputs to the model. We believe the conferees should ask that work begin on development of such a model immediately. Efforts should be a cooperative one similar to the effort that was carried out in the Delaware Estuary.

Richard Boardman

Meanwhile, positive steps should be taken to achieve improved phosphorus removals at discharges, removals that will reduce the total discharged load. The goals should be set in such a manner that the requirements will not outstrip technology but will push the technology to provide better processes. An orderly reduction in total phosphorus load can be achieved in this way while working toward the goal of meeting the water quality criteria.

In addition to this program, steps should be taken to understand the mechanisms of rural and urban runoff contributions and methods for reducing this load should be studied and demonstrated.

For the future, in addition to the mathematical model, and with results of such a model, consideration will have to be given to allocating phosphorus loads to meet the criteria, and if we were to allocate the phosphorus loads, divide the input to, say, input from Lake Huron, input from sewage, input from urban land runoff, input from rural land runoff and input from industry we believe that the phosphorus load should be distributed among the States in the following manner:

1. Input from Lake Huron -- not distributed.

2. Input from sewage, urban land runoff, and industry -- by basin population.

3. Input from rural land -- by basin drainage area.

These allocations should be made on a pounds per day rather than a percentage reduction basis. In this manner, the total discharged load of phosphorus will not increase as population grows. Improved phosphorus reduction will be required as our population grows.

MR. STEIN: Thank you, Mr. Boardman, for your contribution.

Are there any comments?

I think you have some action programs there. There is no objection to them, but it will have to take some push to get into effect.

Now, the first one, if we are talking in terms of a model, the question naturally comes up: Are we going to be able to do that with the American side; are we going to have to get the Canadians involved in this model or not; and then we have the other points brought up by Mr. Eagle on monitoring flow pattern, control area and deep water dispersal.

All these matters, it seems to me, are going to require exploration and probably by the Federal Government of availability of funds and resources to do it.

MR. BOARDMAN: Absolutely.

MR. STEIN: Okay.

MR. BOARDMAN: I think I pointed out that an effort similar to the Delaware Estuary undertaking could be used where the primary effort, in the sense of the model-building, was undertaken by Public Health Service and then Federal Water Pollution Control Administration. But the States and those involved served on a Technical Committee and provided inputs into the model, and in this manner, I think, an excellent model was developed on the Delaware Estuary, and we hope the same thing can be done for the Lake Erie plant; and I think it probably would help to answer a number of the questions that were raised as to what should we do in the future.

MR. OEMING: I would like to pursue this point with Mr. Boardman.

MR. STEIN: Yes.

MR. OEMING: I think what you are saying to me at least is that we start with 80 percent now and the need for how much further you go ought to be predicated on some study such as you are talking about. Is this what you are boiling this down to?

MR. BOARDMAN: Well, the 80 percent is very similar to the way Pennsylvania, quite a few years ago, attacked its entire water pollution program. It set the minimum percent removal levels for organic wastes and now we are setting a lot more requirements in terms of pounds per day of wastes that may be discharged. It is a first cut method. We believe that 80 percent removal isn't enough based just on things that have gone on before and inputs from the Technical Committee. We believe that the 90-or-more percent removal probably will be required, but the mathematical model could be used possibly to solve this problem of how should the little ones be treated, how should the big ones be treated, where can we spend the money and get the best results for the least amount of money, rather than just saying: let's have a flat 98 percent reduction or something like this.

MR. STEIN: You know, this reminds me of -- we have heard these things before -- it is like a Broadway show. Everyone has a good idea for the Broadway musical but you have to have the book and the music before you can go.

Now, I would suggest that we need a specific proposal from the technical people both on what we are going to do on the model and with at least an estimate of the cost. This should include an indication of whether it would be necessary to coordinate with the Canadians and also what we are going to have to do on monitoring flow patterns in control areas and for study of deep water dispersal. Then, if we can endorse it we will go ahead.

Now, we have got two ways of doing this: either set up another group, or, perhaps, Mr. Oeming, if you would care to expand the committee that you are going to set up on this boat pollution to come up with a proposal to look into these proposals, you are to have a committee established next week.

I suggest you get into boat pollution first, but these people have this job, either to appoint successors to that committee to take up this job, or else the successors can be the people on this committee, if you didn't want to change it to get into this problem. In other words, this is going to take a little longer. You may be able to clean up that boat business in one meeting maybe but --

MR. EAGLE: Mr. Stein, I would like to interject here, we are talking about two vastly different things, and as far as Ohio is concerned, I had in mind having our recreation people on this boat committee, the people who are responsible for the licensing, and if we are going to discuss the phosphate problem with the same committee then we have got an entirely different type of people.

MR. STEIN: No, let me clarify this. I was just doing this for the purpose of organization. Instead of setting up two committees, if we would let Mr. Oeming have the boat meeting first and let this committee go on and when we come to the phosphates and the model program, you will have successors. This will be someone different in Ohio, but it may be the same one in some of the States. What I was suggesting was, since we had this one committee going, and the Federal people were to provide the clerical staff and Mr. Oeming the chairmanship, maybe we could just continue this and after the boat session is done, with different people let this go ahead rather than establish two different committees.

MR. EAGLE: Mr. Oeming has already formulated his policy in Michigan with regard to phosphate removal so I don't know how he would be in a very good position to negotiate some other criteria.

MR. STEIN: Well, I tell you this: How would you like to take the second committee?

MR. EAGLE: Fine.

MR. STEIN: All right, you have got it, George, and you get together with -- now, this will include the model question, too, okay?

MR. EAGLE: Sure.

MR. STEIN: All right, fine.

Ohio is getting better and better day by day. They will have to come here more often.

MR. EAGLE: You are just catching up with us, that is all.

MR. STEIN: I notice in the hall a loyal supporter and friend of water pollution, and one of our board of directors, and the man we report to back in Washington, Congressman Vanik. Do you want to come up or say something at this conference?

THE HONORABLE CHARLES A. VANIK,
U. S. HOUSE OF REPRESENTATIVES,
WASHINGTON, D. C.

MR. VANIK: Just one little contribution.

MR. STEIN: Sure.

MR. VANIK: Should I get up here?

MR. STEIN: Surely.

MR. VANIK: First of all, I want to say that I am, of course, thrilled that this conference is going on and carrying on this important work, because we have made progress. There is no question about it. Of course, I am delighted that the Federal Government itself is, I think, making the biggest contribution of all, not only in providing the Federal conferences and the constant study and the research that is provided through our offices, but I think the Federal Government has met the criticism that I first directed here for the first time in the Great Lakes area on the dredging problem in the

Great Lakes and the dumping of the dredged materials into the open lake.

From all I can see, the Corps of Engineers are moving with great dispatch and with commendable speed in providing the diking, in providing the containment area for this material, and it was finally acknowledged that this material did contribute to the pollution. That took us about a year and a half, I think, didn't it, gentlemen? But after we got over that hurdle, I am just thrilled that the Corps of Engineers is moving to take care of this problem not only in Cleveland but on all of the other Great Lake cities.

With respect to the legislative prospects for next year, I have some very grave concerns about the law, because as I sit and from where I sit in Washington and I look at problems of great magnitude, I just don't feel that all of our Federal resources ought to be provided for incentive programs for small communities around the State to eliminate their cesspool problems and to get sewers built. This is fine. This is important. This is desirable. But I am concerned about Lake Erie. I am concerned about the capital problem, the major problem, and outside of the Federal Government's decision to dump dredged materials into the diked areas, I cannot see any constructive bold step to meet this problem, and I feel that we have got to have a massive program on the lake. Whatever you have said about it is true, and I take it to be scientifically established that the lake is dying, and I think we are just sitting at a wake watching it die. I cannot see that we are making any great strides or a stride commensurate with the problem to try to solve it, and I am particularly concerned about two things:

First of all, I feel, Mr. Stein, that in the new law, and when we convene in Washington in January -- whoever convenes -- that we must have a massive program for the really grave problems. I think the interstate problem of the Great Lakes is going to take some separate funding, separate and apart from the matching program that is provided under the Water Pollution Control Act.

For example, in Ohio right now, there is a proposal on the $759 million bond issue which the Governor proposes, $120 million that is allocated for water pollution control, and the purpose of this money, as it is stated right in the announcement on it, is to encourage local governments to participate in the program of pollution and to provide a State share to match the local share to get the Federal money.

Now, that $120 million so far as I can see is not going to help the grave Lake Erie problem. There is not a dollar going to be provided for the massive study, for the research, for the analysis. We don't know really how to approach the problem in a massive way without having some concrete studies. There is nothing in that $120 million with which Ohio is expecting to get a great reservoir of Federal money. There is nothing there that is substantially going to meet the problem. That, in my judgment, is most important to over half of the people of the State. Over half of the population of the State lives in this watershed, and half of the population of the State is critically involved with Lake Erie, It seems to me that we ought to get some certainty that under the Federal program there is going to be massive approaches to problems that are multi-State, problems that are interstate, problems that are general and affect the whole welfare of the United States, as the Great Lakes problem does.

Secondly, I certainly hope that the Governor and the water pollution authorities of Ohio will tell us, give us some commitment, that of this $120 million bond issue which I would like to support, that of this money, there is going to be some certainty that Lake Erie is going to get the benefit of some of this spending, and that the taxpayers of Ohio are contributing to, so that we can feel that we are making some headway, some progress on the real grave problem that affects all of us here more than any other and that is the Lake Erie problem, and I certainly hope that we can, out of this conference, get two things: 1) some sort of commitment that the Federal Government is going to make some kind of a massive immediate approach to the grave interstate problem of the Great Lakes and their pollution; and, 2) that the State authorities will give us some encouraging hope that of the $120 million that is going to be raised in the Statewide bond issue that a good part of this money or at least half of it will find its way to the really grave Lake Erie problem.

Now, that is all I have.

MR. STEIN: Well, thank you very much.

I hope we will both be back in Washington: you to keep us honest and me to be kept honest.

We should go on to New York now.

MR. POSTON: Well, you indicated that Mr. Eagle was going to be chairman of a committee. What is the purpose of this committee?

MR. STEIN: The committee will report to the conferees on the feasibility of our having, one, a construction of a model and a model analysis for Lake

Erie, and whether and how we are to do this with Canadian participation, or whether we will have to construct a model of the whole lake including the Canadian side and a reasonable method for this to be done.

He will also come up with a proposal and indicate how much money it is going to cost and the proposal for a monitoring of the areas where blooms occur, the question of a flow pattern, trace the influence to shore of tributary discharges, control area in the receiving lake and demonstration projects.

I think the Federal people can, if Mr. Eagle wishes, provide the clerical service for this, and we would ask all conferees, State and Federal to put people on this committee.

MR. POSTON: That means there would be a member from each conferee's State.

MR. STEIN: Yes, each State and the Feds would have one member.

MR. EAGLE: Are we talking about any specific time limits?

MR. POSTON: When would this report be due?

MR. STEIN: Well, here is the point: I don't know what the extent of your problem is here.

MR. EAGLE: It is pretty extensive. I can tell you that.

MR. STEIN: In preparing the report, if you are going to take longer than six months, you should tell the conferees.

MR. EAGLE: Well, six months is very reasonable I would say.

MR. STEIN: Yes. You know you can get these preliminary reports, but if we are going to deal with specifics on a model and a question of flow patterns and monitoring, we had better be pretty well set before we take that up, it seems to me. But I think we should think in terms of six months, but you may need longer. I am not sure you will.

May we call on New York now?

MR. BOARDMAN: Mr. Chairman, Pennsylvania appreciates that action.

MR. STEIN: Thank you.

MR. METZLER: Thank you, Mr. Stein.

STATEMENT OF DWIGHT METZLER, DEPUTY COMMISSIONER, NEW YORK STATE DEPARTMENT OF HEALTH, DIVISION OF PURE WATERS

MR. METZLER: Fellow conferees, yesterday was a good day. I got the morning paper and it said that the plan to save Lake Erie had been completed. I hope that those who are attending here today get a more balanced view. This is based, of course, on the Lake Erie Report, which has a great deal of strength in the enumeration of sources, and I think for the first time puts this together in a package that you can see.

I was disappointed, as I am sure my Federal and State conferees were, at the lack of specifics as far as the interaction between the pollution which is occurring which should be abated and the effect which its abatement might have.

The New York State Department of Health has spent considerable time in the past few months reviewing the proceedings of previous sessions and examining the massive amount of technical data on nutrients and eutrophication produced over the past few years. We have consulted many experts from the States, the universities and the Federal

Government. We have maintained a dialogue with experts from other nations both visiting their facilities and inviting them here to consult with us. Most recently, the advice of the New York State Department of Health Commissioner's Advisory Committee on Algae and Related Problems was sought and received. I would like, at this time, to read the statement prepared by this committee of outstanding scientists, in response to a question that I asked -- a very simple question: Will phosphate removal retard eutrophication in Lake Erie?

The Committee recommends -- and this is a statement of the committee -- that phosphate removal be practiced at all wastewater treatment facilities in the Lake Erie Drainage Basin. Such facilities should be designed and operated so that no effluent will be discharged with a total phosphorus content exceeding 0.5 mg/l as phosphorus.*

Then, the footnote to this says: *This is equivalent to about 80 to 90 percent removal of the phosphorous content of domestic sewage. It is felt that an effluent standard should be utilized rather than percent removals in order to avoid misunderstandings. Both chemical precipitation and the Thomas-Barth activated sludge process are capable of achieving these results at cost ranging from one cent to five cents per 1000 gallons over the cost of conventional secondary waste treatment. (End of footnote)

This effluent quality is to be achieved by a bona fide treatment process and not by effluent dilution. But then I want you to note carefully this next sentence: "It should not be expected that this step alone will cause dramatic improvements in the quality of the lake. However, it is felt that this preliminary step is required to avoid possible future undesirable ecological changes in the lake. It should also be realized that this recommendation represents the minimum requirement which can be realistically justified at this time. As our understanding of the ecology of the lake increases and as more economical and efficient waste treatment processes are developed, it should be expected that more stringent restrictions not only on phosphorus but on other constituents of wastewater will be required if an acceptable water quality is to be achieved."

Ending the statement of the committee.

Diversity of opinion on this subject was demonstrated in that this statement was not approved unanimously by the committee. Some members indicate that there is, as yet, insufficient knowledge to take the recommended action. After a thorough review of the problem, the State of New York recommends for approval at this session the following two positive approaches to the problem:

First, it is apparent that we must act decisively even though there is yet a great uncertainty regarding the cause and effect relationships between the lake's water quality and waste treatment facilities. There is no doubt that all effluents discharging into this basin must be upgraded to a high level of secondary treatment. We have previously submitted a detailed timetable for accomplishing the basic requirements.

Because of the uncertainty regarding the link between the phosphorus content in waste treatment plant effluents and the lake's water quality, we cannot at this time, recommend phosphorus removal at all plants in the basin. However, because the lag between the time a decision for action is reached and its fulfillment is especially great for large facilities, we suggest that all cities with a population greater than 15,000 be required to design into their treatment plants facilities capable of removing phosphorus. These designs should be such that the effluent will have a phosphorus concentration of less than 0.5 mg/l. Such facilities should be completed by 1973. It should not be expected that this action alone will cause a dramatic change in the quality of the lake. More properly, the premises behind this requirement are:

1. The long-range goal of any water quality agency is the complete elimination of changes in water quality due to waste discharges. Since phosphorus is a constituent found in a greater concentration in sewage than in natural waters, it should be removed to the extent that it is technicologically possible and economically practical. It is presently technically and economically possible to remove phosphorus at large plants to the concentration recommended.

2. There is the possibility that phosphorus removal will retard the aging of the lake. However, future studies may show that this is not the cause and some other material must be removed. Waste treatment facilities are basically a series of concrete tanks regardless of the unit processes involved. If, in coming years, new information indicates that some material other than phosphorus is the primary cause of eutrophication, plants should be modified to remove that element without increased major expenses, or at least without loss of the capital expense already made.

3. All present processes for phosphorus removal also increase the B.O.D. and suspended solids removal efficiency of the waste treatment facilities over that which is normal for secondary treatment.

Dwight Metzler

4. By concentrating our efforts on large plants, we can get a substantial reduction in the total number of pounds of phosphorus being discharged into the lake. If this causes an improvement in the lake's quality, we can then work on the smaller plants.

Our second recommendation involves further study. These recommendations also have been made by some of the other conferees. Obviously, such further study is required. The problem is what type of study. Or perhaps, more precisely, how can the present expenditures for studies of the lake be channeled in such a way to yield the maximum results. What we propose is a systematic study of presently available ecological, chemical, biological and engineering information. This study is in line with what has been proposed by Pennsylvania at previous sessions and again, I believe, today.

The purpose of this study would be to put the information in such a form that decision-makers can make rational decisions on the need for and value of nutrient removal facilities for wastes discharging into the basin. This study will also have the secondary purpose of determining what gaps exist in our knowledge in making such decision-making more precise. Such a study will require the advice and help, not only of the conferees at this session, but also a considerable amount of assistance from the universities and governmental agencies presently having a knowledge of the lake. The advice of agencies, such as the Bureaus of Sport Fisheries and Wildlife, Commercial Fisheries, and Outdoor Recreation would be required. We recommend that this conference consider ways of administering and financing such a study project.

So that you might know that this is not just some quickly drawn together idea but rather is a matter of considered deliberate study, I have asked Dr. Hetling, who heads up the research activities for the New York State Health Department in the area of environment, to give you a brief outline of what such a study might entail.

Dr. Hetling.

LEO J. HETLING, DIRECTOR,
RESEARCH ENVIRONMENTAL HEALTH
SERVICES, NEW YORK DEPARTMENT
OF HEALTH, ALBANY, NEW YORK

DR. HETLING: I think previous discussion has indicated that Mr. Stein would like to tie down the type of study we are talking about in more detail. What we propose is a study which will provide information to decision-makers so that rational decisions on the need for and value of nutrient removal facilities for wastes discharging into the basin can be made. The problem is how does one go about this?

Leo J. Hetling

One mentions systems analyses and most people turn off their ears. I think possibly a short outline of what we are talking about would help. We are talking about a systematic study of presently available ecological and engineering information which will be made. No new laboratory or field studies will be implemented. The ideal end result of the study will be to produce the curve shown by Figure 1.

We don't have a blackboard, but what we are talking about is a curve. On one side, one axis would tell the ecological condition of the lake ranging from perfect up through acceptable, possibly the present condition, highly undesirable and up to catastrophic. On the other axis is what investment would be required in waste treatment plants to achieve those conditions.

If such a curve were available, one could say if we wanted acceptable conditions of the lake one could go across and find out what it will cost per year to achieve acceptable conditions. If one decided that was too much money, that our international situation or other problems preempted the funds and these funds were not available, one could then use the curve the other way and say that such an investment will cause such a condition in the lake.

Leo J. Hetling

Now, such an ideal curve cannot be realistically produced. Our knowledge of the real world is full of uncertainties. What can be achieved, however, is Figure 2. This is similar to Figure 1 but has probability statements attached, to account for the uncertainties due to the randomness in nature, ignorance of nature, changing technology and a changing economy.

With this new probability type of curve, the decision-maker having decided that he wanted to be 90 percent sure of having an acceptable condition would see that an investment of y dollars per capita per year would be required. He would also be able to state that with this investment there is a small chance (less than 10 percent) that perfect conditions would result. On the other hand, if for economic reasons it happened that only x dollars per capita per year could be spent, it could be said that it is 90 percent probable that conditions will not get worse than highly undesirable and a 50 percent chance that present conditions will be maintained. There is even a slight chance (less than 10 percent) that acceptable conditions will be achieved.

In order to produce Figure 2, it would first be necessary to construct the curves in Figure 3. The curves shown in Figure 3 would not be easily gotten. An objective review of all the literature available would be necessary, followed by many subjective engineering, ecological and economic judgments. The opinions and ideas of many experts would be required. Since much of the data would be subjective many difficult points will have to be resolved by discussion and consensus.

Methematical techniques although complex do exist for constructing the curves and combining them to form Figure 2. Although for simplicity in explanations the data is presented as final curves, a computer model of the material would be desirable. With this computer model, the sensitivity of the system to various assumptions could be computed and the need for and value of further research in the assumed area could be determined. Such a computer model would also make it possible to include various new scientific and technological knowledge about the system as they become available. As such knowledge became available, the spread of the probability curves on Figure 2 would lessen and more definite statements will become possible.

It is estimated that the study of this sort would take about two and a half years and cost approximately $200,000. There are various groups in the country that I think are capable of carrying out such a study.

The success of the study would depend on the ability to obtain a key staff of two or three people not only trained in the newer methods of using system analysis but who have enough knowledge of biology, ecology and engineering economics to interpret and utilize the information provided by specialists in these fields. Equally important would be the willingness of experts in various areas to provide their time and knowledge to the project. The essence of the project is actually a systematic ordering of available knowledge.

(Figures 1, 2 and 3 referred to by Dr. Hetling follow:)

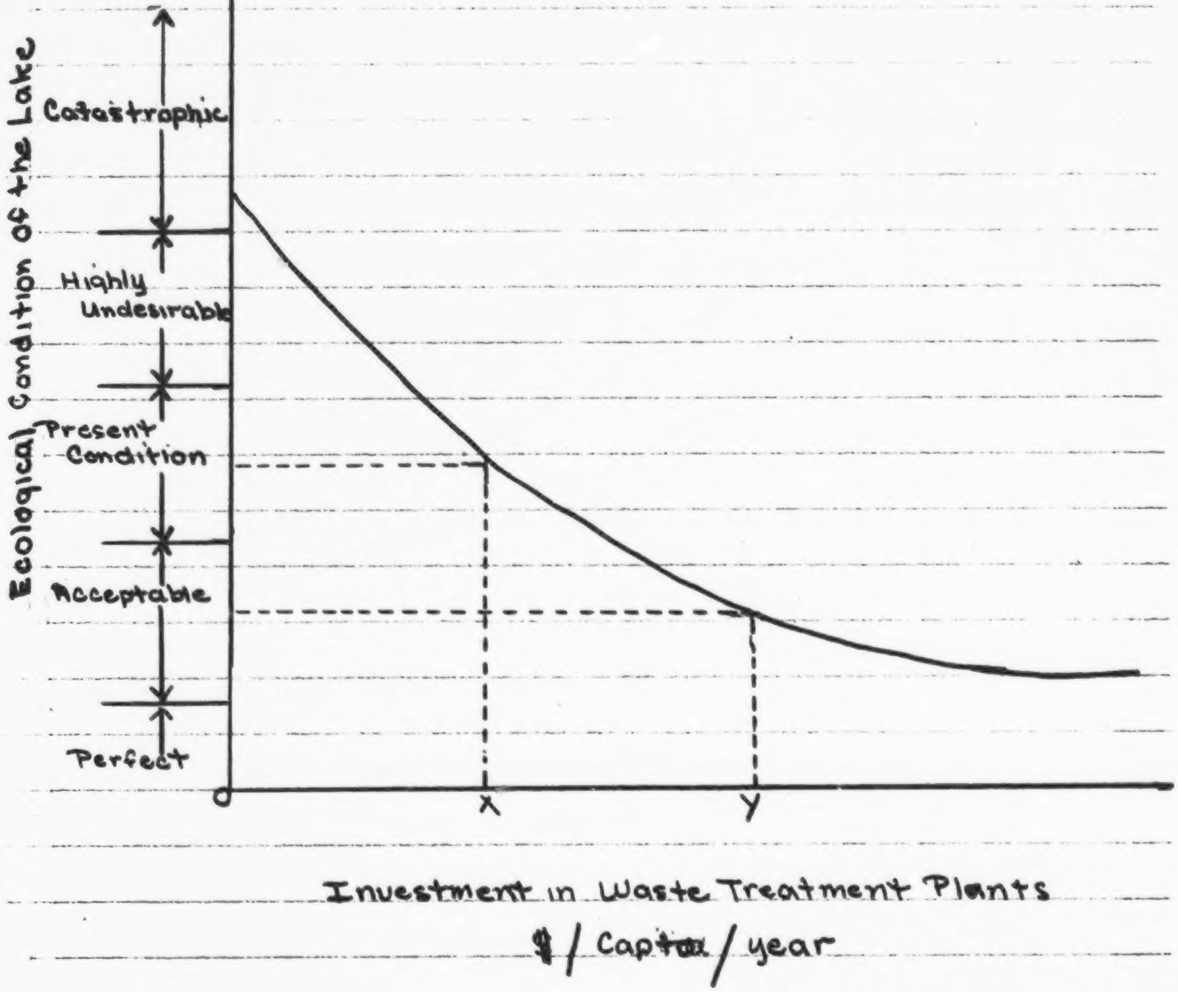

Ecological Condition of the Lake
Catastrophic
Highly Undesirable
Present Condition
Acceptable
Perfect
0
X
Y
Investment in Waste Treatment Plants
$ / Capita / year

Figure 1

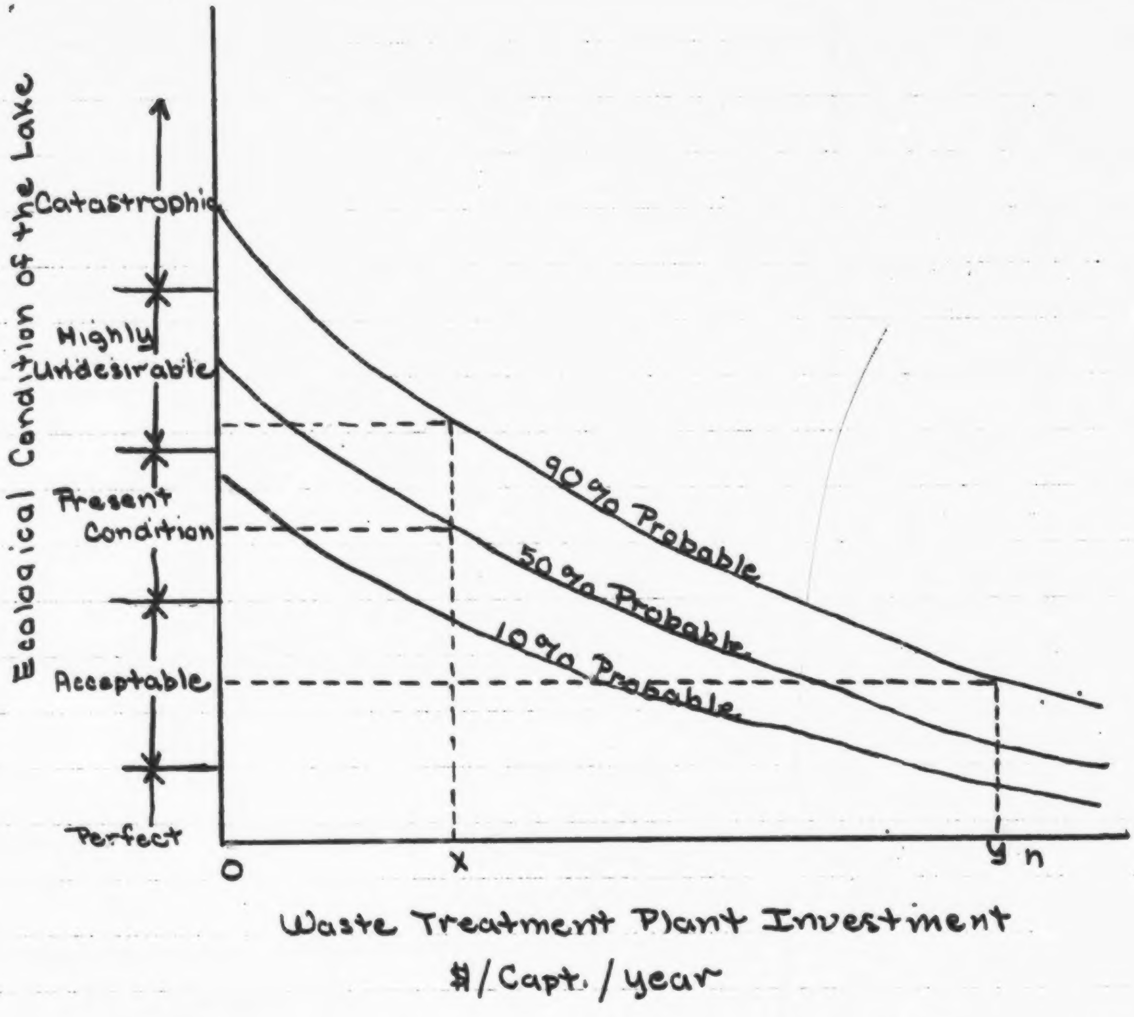
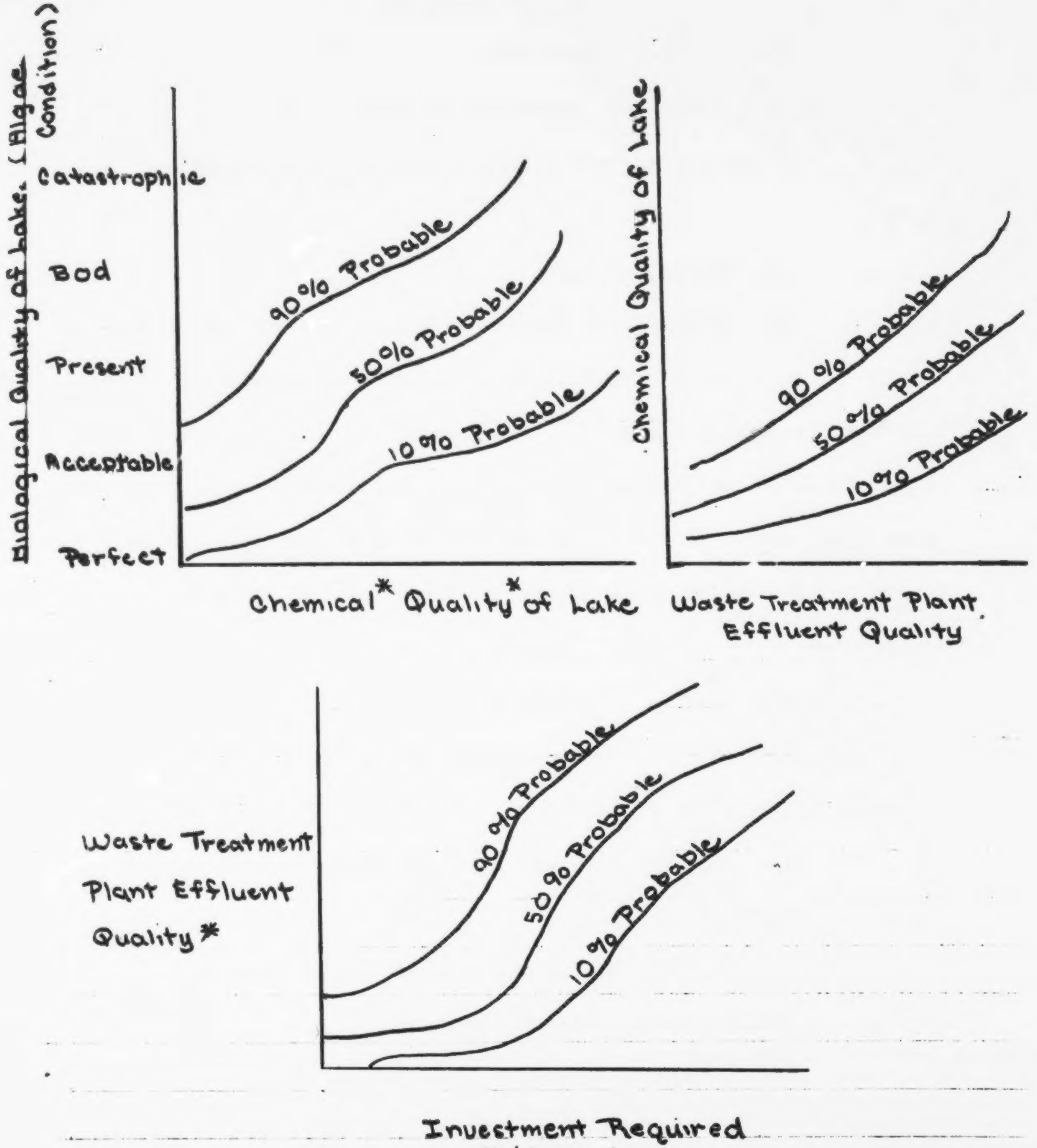

Ecological Condition of the Lake
Catastrophic
Highly Undesirable
Present Condition
Acceptable
Perfect
90% Probable
50% Probable
10% Probable
0
x
y
n
Waste Treatment Plant Investment
$/Capt. / year

Figure 2



* e.g. Phosphorus Compound

Figure 3

MR. STEIN: Thank you.

Are there any comments or questions?

I wonder if the committee could take this up, too.

DR. HETLING: Sure.

MR. STEIN: Of course, I think you are pretty much ready to go on this, and we have given the committee about six months. Now, this will not preclude, I hope, the committee, if they come up with any recommendations that they feel the conferees can act on or put into effect much earlier to come up with these recommendations to the conferees.

MR. EAGLE: Certainly.

MR. STEIN: Because that may be an endeavor that you may be able to endorse.

MR. EAGLE: I think some of these we can do relatively soon.

MR. STEIN: So, I think this would help.

Thank you very much, Doctor.

MR. METZLER: I would like to -- stop me if I am wrong -- now, there is one thing. We have been talking about some committee activities, but there is a difference, I think between a systems analysis approach such as you have heard and anything that I have heard about committee activities. I don't think we can do this with any committees that are set up or by the conferees sitting around this table here. I think that our reaction to this is either that we think it is a good idea and the States and the Federal Government will jointly fund it, or that we don't think it is necessary and we will pass it over.

MR. STEIN: Well, again, now, do you think we are able to make this judgment now on this?

MR. METZLER: Oh, I see. My answer is that I have looked at this enough so that I am convinced and we have heard this -- this didn't originate in New York. The only thing I claim for New York is that we have presented the first proposal that you can follow so that you can get a clearer picture of what is in mind and we put a dollar cost on it. I think, as a conferee, I am ready to consider this and to make a recommendation and to say that New York would perhaps be able to participate financially and --

MR. STEIN: Well, again, Mr. Metzler, I don't argue with this. The question, I think, is why I suggested it be referred to the committee, 1), there may be some details on this that the technical staff might want to look at; and 2), I think possibly New York and maybe Washington has a little different position on funds.

Well, you have looked at this. In other words, I might be able to say, yes, we will do this, and we are going to get $20,000, $50,000 or $100,000 out of the budget. We went through an alewife program. We know how difficult it is for a State to even raise $30,000 or $40,000 or $50,000 when it is not appropriated.

I think we have two aspects here: 1) if we are going to do it; and, 2) what kind of financing. I think it might be better to refer it, so they could look at this, to see if it is worthwhile their putting in the money and then coming to us with a proposal if it should be done and who is to pay for it.

MR. METZLER: It seems to me that this question that you have raised is one of the principal reasons we ought to be here today. I would hope we might shortcut the committee, but that is just the point of view of one conferee.

MR. STEIN: Again, sir, in talking about the alewife program, the easiest and goodness knows this wasn't easy -- I must have been out to Chicago 20 times getting the details of the program worked out -- but the easiest thing was working out the details. The hardest thing was getting the funding. Poor Michigan had to go back to the legislature -- the State Legislature -- to do that. That is why I say --

MR. METZLER: Well, poor New York would have to, too.

MR. OEMING: Mr. Chairman, I have great respect for Mr. Metzler's recommendations and viewpoints on this, but I think I am of the opinion that we ought to start at least with this committee review of this under Mr. Eagle's leadership and knowing how you feel about this I think that your feelings and your position can well be factored into this without embarrassing or causing any difficulty with your presentation here. That is my feeling.

MR. STEIN: Is that agreeable?

MR. MILLER: Certainly.

MR. POSTON: Well, I think I got a little sidetracked here when we started to talk about a study now, and I really thought we were talking about phosphate removal, and I would like to ask Dwight -- he had some recommendations about phosphate removal here, and it kind of looked to me like his requirement would be for towns of 15,000 and above that we would have removals down to 0.5 mg/l of phosphate which really would amount to 90 percent removal or thereabouts.

MR. METZLER: I don't want to talk about percentages. We have learned in water pollution control a long time ago that such generalized things as secondary treatment 85 percent removal, etc., doesn't mean a thing. I have learned this about 20 years younger. We tried to put this kind of requirement on an oil refinery in terms of the amount of oil they could put in the Missouri River, and they just bought four times as many pumps as they had before. They put the same pounds in, but they pumped four times as much water to do it.

What we are interested in -- and George Eagle highlighted it very well -- is controlling the number of pounds going into the lake. If phosphorus has any effect on eutrophication in the lake or the growth of algae in the lake, we want to control it, and the way to do that is to put on an effluent standard and then meet it.

I am in the hands, as a matter of fact, of some of the most distinguished biologists -- at least in North America -- on this point, and I am not certainly as an engineer going to run counter to that.

MR. STEIN: Are there any other comments on this?

MR. OEMING: Mr. Chairman.

MR. STEIN: Yes.

MR. OEMING: I wish Mr. Metzler could enlighten us a little bit more here on the actual experience -- how extensive it is -- your experiences are with this process that you are relying upon to get you 0.5 effluent concentration. How extensive is that?

MR. METZLER: Actually, it is my understanding that the use of the Thomas-Barth process anyway, once you put in enough lime to make it go, it goes all of the way, and I think that this may be true of some of the other chemical processes. At least this is the advice that I have, Larry.

MR. OEMING: Has it been in operation in cities the size of Albany or -- I know better than to ask that question but -- Buffalo, New York, or any of the plants of this size?

MR. METZLER: To the best of my knowledge -- and I will ask Dr. Hetling to veto me or supplement this if this is incorrect -- my visit with Thomas anyway was on the basis of his experience using it in Switzerland. I don't know of any American cities where this is being used.

MR. OEMING: I think this is what concerns me, Dwight, about that particular figure, in that the program that we are following, first of all, is to evaluate the raw load to our facilities. We are finding the phosphorus content running all over the map. There is no explanation for this, but it is actually happening, and then where we are applying iron and the -- you know what I mean -- what am I trying to say? -- iron and something else --

MR. STEIN: Lime.

MR. OEMING: -- and so on, we are not getting very consistent results. We are getting 80 percent removal and 82, or 85, and down as low as 75, but from the standpoint of effluent quality, it is very inconsistent, and I am a little uneasy about being able with the literature and the technology as it is now to affix a figure at 0.5. I would much prefer to set a poundage limit, poundage on the effluent.

Say we are talking about so many pounds of phosphorus coming from X-number of communities, and then working back and saying, well, this happens to be 80 percent, which is what we did in Michigan. We have set poundage limits on each one of the contributors to the Detroit River, and it happened to come out at 80 percent.

Now, I am talking the same language you are except I am talking about a fixed figure, and if you use only the concentration as the community grows you are going to increase the poundage, aren't you? That is 0.5 parts per million a day, and so on, and so many gallons of waste will be less pounds than it will be ten years from now with more people.

MR. METZLER: Actually, we have a fundamental difference here, Larry. I am under the impression there are at least two processes that will remove this down consistently to about a half a part per million, or half a milligram per liter.

MR. OEMING: I haven't anything in our experience --

MR. METZLER: If I am incorrect in this, then, that is the wrong figure to use. I do think that the limitation -- once we go to the expense of doing this, it seems to me we ought to take out what we know how to take out and we ought to do it for the sources of pollution that count. I am distressed at the idea that we would try to do this for a community -- somebody mentioned -- of 200 or 300. I would be as hesitant to do this for a community of 2000 or 3000 because I think you can put the facilities there but I doubt very much if they will ever be operated. The point is that it doesn't really reduce the poundage that much.

It would be better to say to Detroit, or Buffalo or Cleveland, to kick up your efficiency a tenth of one percent, than it is to say to forty little Ohio communities: put in waste treatment or phosphate removal facilities.

MR. OEMING: I don't disagree with that concept.

I only have reservations about putting all our eggs in this concentration basket only, and I think --

MR. EAGLE: Mr. Chairman.

MR. STEIN: Just a moment, Mr. Eagle.

MR. OEMING: I think that, at least from where I sit and with our experience in Michigan with operating these facilities under very controlled conditions -- now, we would not feel very assured that we could say, well, we are always going to get 0.5 parts per million of phosphorus even with best control.

MR. STEIN: Mr. Eagle.

MR. EAGLE: Mr. Metzler, would you have any objection to carrying this a step further and relating this to loads, setting this as a policy -- suggested policy or objective, if you will, of limiting this to places larger than 15,000, and an objective of reducing it down to 0.5 milligrams per liter and then relating -- and in addition we set a load limit on each State or area of a State, if you will, and then this would be related to this load limit.

MR. METZLER: I think, Mr. Eagle, your approach on load limits is absolutely the one that needs to be followed, and I was merely interpreting that, moving from the load limit back to an effluent concentration. I think

I agree with both you and Mr. Oeming on the point that you have to do it on the point of load limit, and I thought that the load limits were essentially specified in the Lake Erie Enforcement Technical Committee Report of June 1, 1967.

MR. EAGLE: That is what I thought, too.

MR. METZLER: So I agree with that, and if the technology has not been developed to the place where we can use a half part per million as the target, then perhaps we should set a different goal.

MR. EAGLE: I think this would be fine as a suggestion for policy.

MR. METZLER: All right.

MR. EAGLE: Or objective, or what-have-you, but the load limit would be the fixed figure.

MR. METZLER: The load limit would be the thing. After all, it is reduction of the total load that we are after.

MR. OEMING: Mr. Chairman.

MR. STEIN: Yes.

MR. OEMING: I wonder if we are not getting at the crux of this question now, and I would like to propose something here along this line. To overcome this question of how far you are going to apply this phosphate removal and all these matters if an approach isn't appropriate here, somewhat along the lines of the Lake Michigan Conference, where we, at that point, agreed on a certain percent removal, but we asked each of the States and the Federal Government to come in with a report of the communities within six months; list the municipalities and industries and the Federal Government discharging to Lake Erie, the amount of nutrients, and their views on what they are prepared to do, what they consider as significant loadings and what they are prepared to do to reduce these loadings.

Does this get at this? Is this a kind of a cut-down-the-middle approach here?

MR. STEIN: I think so, and if we could do that, we may get around first base.

Dwight, we have in effect done something like that in the Hudson in dealing with a complicated compliance operation like this where you literally have loads of cities and industries. What we all have to come down to is a specific list, such as you have, that we look at this thing to see if it is reasonable and within the framework of where we are going.

Let me try to clarify a few points here: One, I don't want to take issue with anyone on this, but I do think that we all prefer the pounds per day if we can do it. This is the level we are thinking of. This is not related necessarily to population increases or other things.

Now, with all due respect, Dwight, to the notion of the 0.5 mg/l and the 80 percent, it appears to me that they both may have the same defect, because you used it here that it had to be a bona fide operation. Presumably you could use the four-pump device to get down on this, or as your population increased, or your production increased, you could have a 0.5 mg/l.

Now, the reason that we got to this 80 percent is that, as Larry said, in a rough way, we worked it back from a pound per day operation -- this was an administrative device to get him to check this out. I would not doubt that if you use that 0.5 mg/l you could have an administrative device to do the same thing, which might be more stringent than his. In other words, 80 percent is probably a little less. But until we get to what, I think, Mr. Boardman was talking about, an allocation system, or Mr. Eagle -- an allocation system among the States, and then an allocation perhaps on the basis of areas within the States, and to get this reasonably set out, what we are going to have big cities and small cities do, we are not really going to get to the phosphate problem.

Murray Stein

For the people here -- and I would agree with Mr. Metzler -- one of the points he puts out is this: Even if we do this, this just might handle the phosphate problem, but it is not necessarily going to wave a magic wand and clean those blooms up in the lake all by itself. But what we are talking about here is we are faced with all these problems. We do have a problem where we are going to begin constructing and finish works by 1971-1972.

Now, in order to fold in the phosphate removal, I think in your statement, Mr. Metzler, you indicated that a certain minimum -- we should fold this in for phosphate removal of a certain minimum amount of phosphate removal now recognizing the limitations that we are going to get if we get the phosphate removal, recognizing the imperfections we have in the technique.

Now, as far as I can see, and check me if I am wrong -- and I am not talking in terms of the cutoff now, in the specific community or not -- but does it really make much difference if you attempt to get 0.5 mg/l or 80 percent as your technique now? I don't know that we can get that. Does it? I mean we are all --

MR. OEMING: We are talking about poundage to the lake. This is what I am talking about.

MR. STEIN: Right. Now, in other words, I think if you use the technique and you really could get 0.5 mg/l as the basis of the New York program, you would beat -- any plant that did that would beat Pennsylvania's, New York's or Indiana's 80 percent. So, there is really no disagreement, and until we get a lot sharper, on the basis of this committee, on the basis of the pounds, then maybe this might be the best we can do.

MR. OEMING: I would like to comment a little further on Mr. Metzler's 15,000 population. Perhaps this would be suitable for his State. I think that it would be a mistake to set a population figure here. That is, Michigan might want to go down to 5000. In fact, I know we are -- maybe less than that, depending upon the circumstances -- and the kind of contribution we are making, but it seems to me that the States ought to make up their minds what they are going to do.

MR. STEIN: Let me ask you a question, Larry.

On a pound per day reduction -- and I am just talking in terms of pounds per day -- what kind of reduction did you get, an 80 percent reduction in pounds per day?

MR. OEMING: That is what it came out at, taking the poundage you were going to reduce to meet certain levels in the Detroit River.

MR. STEIN: Well, let me try this. Again, this is, as I say, a technique of getting the idea.

Let us suppose, taking these points, that we talk in terms of a reduction now of 80 percent in terms of the poundage, knowing how difficult that is, with your operation. Let us suppose that we, over the next, let's say, six months -- but we may be able to do this more rapidly -- get a list of your program for all your cities going into Lake Erie. In terms of the list perhaps, or with the variance you want to use, that Mr. Eagle used here, let us suppose that given the variance you have, 5000 or 50,000 or 15,000 population, or the allowances for small or large communities, or whether you are going to use 80 percent or a percentage or pounds per day, or 0.5 mg/l, that we get these lists from the various programs with the notion that we are going to come up with a program that is going to get -- however you translate that with the imperfections -- into an 80 percent reduction in the total loading from your State areas as your contribution.

Now, what do you think of something of that nature, and that may meet all of the States' requirements.

MR. METZLER: Let me point out that incidentally New York shouldn't take probably too prominent a role in this. We are going to take 100 percent out of Buffalo.

We are just going to take all of the Buffalo sewage out of Lake Erie, so we are going to take out 100 percent of Buffalo, and I don't want Detroit to increase their poundage by the amount between 80 and 100. (Laughter)

Specifically, you have quite a difference between what I am suggesting here for Detroit and what Larry is talking about, the difference -- I don't know what Detroit's wastes are running, but I looked at some rather complex New York sewage the other day that was running about 20 parts per million of phosphates. Now, there is a lot of difference in 4 parts per million in the effluent and 0.5 parts per million in the effluent.

While I am not convinced that phosphorus is the whole answer, if you move to take out all but a half part per million in the Detroit wastes, you are going to get a higher level of overall pollutant removal, and it is not just phosphorus that is causing the trouble in Lake Erie, you are going to have a generally upgraded level of treatment in the big cities, and this is what is going to make the difference on Lake Erie.

MR. STEIN: There is no objection here, Dwight.

Let me go through this again. I agree with what you said. The key point here is that we are going to have a -- we should get a certain amount of the loading out of the lake and a certain amount of pounds out.

What you are saying: We have two techniques in doing this now. Since we are not really precise and haven't got this worked out with the loadings,-- and hopefully we will and be able to move the same way -- we are always in better shape if we can talk in terms of pounds of B.O.D. a day from a certain source. Admittedly we are not ready to do that.

What I am trying to get at is: Mr. Oeming indicates that he is for this interim period where he is roughly trying to get at 80 percent reduction in pounds per day. He is not sure he can use 0.5 mg/l as a technique.

Now, he would have no objection to New York State using it as a technique.

What I am suggesting is that, using the various techniques that the States want to use -- and this will include Ohio -- within six months, we have another meeting and we come up with the list of community-by-community and industry-by-industry indicating what you have done; we evaluate that list and see if that can get at the object of removing 80 percent in pounds a day. Now, if there are any glaring examples of slippages from this, or you are not accomplishing it, then we will all see it, and also we will have the advantage of trying to work toward, at that time, a refinement in terms of pound loadings and allocations based on the States and in the areas within the State.

Now, I say that real fast, but I have been in these State allocations before. This is a very difficult thing to work out.

MR. EAGLE: Mr. Chairman, thank you very much. You recall that I asked precisely for that in my statement for six months time to complete our list in Ohio on what we think we can reasonably do and how many pounds we are going to reduce it.

MR. STEIN: This has one added factor, and that is that 80 percent operation.

MR. EAGLE: Eighty percent I have no qualms or any objection to using this as an objective but in some cases we can do better than 80 percent.

MR. STEIN: Oh, surely.

Well, I am trying to -- again -- let me get off the record here a moment.

(Discussion off the record.)

MR. STEIN: Let's go back on the record, if we may.

I think it is very evident here, from what we have had from all four States that we are all moving toward handling the phosphate program. I think we are all very close together on this. We are dealing with a very new field of endeavor and it is difficult sometimes to get this worked out.

Now, what we are trying to say here is: I am not suggesting that any one State approach, at this stage, is better than the other, or the Federal approach is better than the other. I do think that we have the approaches of the four States here and the Federal Government which are very compatible, and I am trying to work out a method where given this kind of framework we can go forward with these programs together in a compatible way and come up with this.

Now, this is what we did in Lake Michigan; this is what we are going to do here. I think we can't have successful Federal and State regulations in the process we are going to go through, until we come to a field where we are all so certain of it we can agree. In certain areas of pollution control we have a lot more agreement because we have more knowledge than we have here, and I do think we have a compatible program.

Mr. Poston.

MR. POSTON: I would like to, I guess, ask -- and

I have a strong feeling that this six months time period here should not in any way extend final completion dates for the construction of the waste treatment works, which was 1971.

MR. STEIN: No, this is just a report on progress that we are moving toward on this. I don't think that was implied at all.

MR. OEMING: Mr. Chairman.

MR. STEIN: Yes.

MR. OEMING: May I once again get back to what I think you are talking about, and that is: I would commend to the conferees' consideration a great deal of at least the concept that was in recommendations 1 and 3 of the Lake Michigan conference, and this, in effect, said that waste treatment is to be provided by municipalities to achieve a minimum or at least 80 percent reduction of total phosphorus, and that within six months each water pollution agency should list the municipalities and industries discharging nutrients or phosphorus to the Lake Erie Basin, and that this list be presented to the conferees for their review and consideration. It seems to me that is where we are.

MR. STEIN: May I have this?

MR. OEMING: I have changed that to nutrients in there, because we are aiming at nutrients. The underlined portions are what I read from.

MR. STEIN: May I -- in order to modify it here for these people, you listen to this, because there is going to be a change, Larry. Can we say that waste treatment is to be provided by sources in the four States to achieve an 80 percent reduction of the total phosphorus loading. Then, within six months each State water pollution control agency shall list the municipalities and industries discharging nutrients into the Lake Erie Basin; the United States Department of Interior will provide a comparable list of Federal installations. Each source so listed will indicate whether it discharges nutrients having a deleterious effect on Lake Erie water quality, detailed action for treatment of all wastes. All such wastes shall be developed. The list shall be presented to the conferees for the review and consideration of pollution. And that is about it.

MR. EAGLE: Mr. Chairman, I still don't see where 80 percent relates to the Technical Committee's report, and I thought we had accepted the Technical Committee's report as the criteria for the water quality in Lake Erie.

Now, why don't we relate it to the water quality in Lake Erie rather than the 80 percent. This is our objective, isn't it?

MR. STEIN: Well, as I understood this, sir, this was worked back.

MR. EAGLE: In one case. In the case of Detroit. This doesn't apply throughout the basin. Of course, when he only takes out 80 percent, he doesn't leave any room for the rest of us either.

MR. STEIN: I talk in terms of 80 percent as the total loading.

MR. EAGLE: Well, the Technical Committee report figures out about 92 percent. So I don't know where we get this 80 percent really.

MR. STEIN: I said at least 80 percent.

MR. EAGLE: What is so sacred about 80 percent?

MR. STEIN: I thought we came back to that again in the -- there is nothing sacred about 80 percent except in the existence of current technology and the art on day-to-day routine operation. We are not asking more.

MR. EAGLE: I think some of ours can do better than 80 percent, and we are stuck with an 80 percent figure when we set this up on a policy statement.

MR. STEIN: I am not sure you are stuck with it. I see a couple of 80s and 50s in your figures here.

MR. EAGLE: Well, sure. The program isn't finalized either.

MR. STEIN: I know, but this program is not finalized. The issue, again, as I understand it -- if I am wrong on these technical facts I wish someone would let me know -- the technical facts are these, as I understand it: that if you get the phosphate removal process running right, you should have no difficulty at least theoretically, when we get more experience, of removing 90 percent or more. But to date, it has not been demonstrated that in the routine operation of a plant we are able to achieve it, and as administrators, if we ask for something which cannot be achieved, we may be sending the program back.

No one is objecting to 90 percent. If it were demonstrated that you could get 90 percent routinely, I am sure all of the conferees here would be asking for it.

MR. METZLER: Well, I am not sure. I think perhaps part of our difficulty here is in whether we are setting a standard that we absolutely will require if we permit wastes to continue to be discharged, or whether we are setting a target. It seems to me that -- I am quite able to support the 0.5 part per million figure. I wouldn't have submitted it if I hadn't been.

MR. STEIN: Yes.

MR. METZLER: I admit that you are pushing technology on this, but we haven't gotten to the moon yet and we are not stopping, and it seems to me that -- well, if we would soften the language a little and say this is our goal that we would be in a stronger position to adopt something more stringent, of the order of a half part or if you don't like that maybe a part per million.

MR. STEIN: Well, again, we are talking in terms of an action program here, Dwight. What I am trying to do -- and I ask Ohio to listen to this, too -- the point is, George, I am trying to get a compatible program that you can go along with, as well as these other States, and we have gotten this far enough over -- the point is: If we are all going to insist on every element in the program, in our own State program, and not take all four, we are not going to get anywhere. The point is: what I am saying is what Mr. Oeming says, as a minimum, or you could say at least 80 percent.

Now, if you get the half part per million or half milligram per liter, you are going to do that or better on the basis of a total loading, Mr. Eagle. If you get a listing of all your communities -- with the exception of a very few here -- in light of what you have on that listing, if you follow these with the 50 or 100, and again making allowances for the small ones, if you follow that pattern, I think you are going to get this, and we are all talking about the same thing.

If we are going to talk in terms of the doubts we have dealing with the five-State program, we are not going to be able to come up with a statement. I am trying to have us come up with a list where we will all be in the ball park and be able to evaluate that list on the reduction showing that within the terms of the art, we really have folded in a substantial phosphate reduction for this next go-around on waste treatment plants. This is all we are trying to do, and this is why I used that figure of 80 percent of the total loadings. That is not for each plant. And you get your list up and see how close we have come to it.

MR. EAGLE: Well, see if I understand you now. We would take this list that I have here and complete it for the remaining 35, 34 municipalities -- the major municipalities in the basin, which we have a total of about 50.

MR. STEIN: And any industries it would apply to, if any, right.

MR. EAGLE: And our objective would be to get at least a minimum of 80 percent.

MR. STEIN: Eighty percent reduction of the total loading.

MR. EAGLE: But the controlling figure, then, would be the total number of pounds removed.

MR. STEIN: Yes, sir.

MR. EAGLE: This would be the controlling figure, right?

MR. STEIN: Yes.

MR. EAGLE: And, as I understand it now, this figure should be in the neighborhood of -- what is it? -- 40,000 pounds?

VOICE: (Inaudible)

MR. STEIN: Let's not have any voices from the audience. I am sorry.

MR. EAGLE: He is my advisor.

MR. STEIN: Okay, but I didn't want it on the record. He can talk, but let him identify himself.

MR. EAGLE: Well, in other words, we are supposed to move a substantial portion of this 40,000 pounds that has been assigned to Ohio.

MR. STEIN: I don't know that any --

MR. EAGLE: That is what it figures out in the Technical Committee report.

MR. STEIN: On what basis did they make the assignment? On the basis of what you are putting out now?

MR. EAGLE: No, this is what the loading is now, and it has to be reduced by approximately 92 percent, the total loading, in order to meet the water quality criteria of 0.15 and 0.25, respectively, in various parts of the lake, or .01.

What we are interested in are these total pounds to be removed, right?

MR. STEIN: Yes. In other words, we are going to ask for a listing to show, and we will consider this later -- a listing to show what you intend to do in each of your municipalities. The notion is that we will have -- evaluate this on the basis that each State will remove at least 80 percent of the total poundage of phosphates they are putting in the lake now.

MR. EAGLE: All right.

MR. STEIN: All right?

And I think we can all meet that --

MR. EAGLE: I hope this is --

MR. STEIN: If this is not high enough, George, we are going to take this up the next time and evaluate, but I think until we -- and I think Larry and you, and --

MR. EAGLE: Can you say something about it at this time, or something like this -- 80 percent at this time?

MR. STEIN: Well, we can indicate that this will be a first step.

Now, again, let me indicate this to you: This, to my mind, when we are dealing with a big problem, has always been the pattern you have to go in pollution control. For example, when we had the problem on the Hudson, until we got the lists of all of the communities, we really could not determine exactly what you were doing until we got it place by place, and what we have found -- I don't want anyone to have any illusions here -- that as we go along with the program, there is a tendency to tighten up and not loosen up, because we are getting, or at least I think the States and we are asking for higher percentages as we go along. But for the first go-around, let's look at this by city-by-city, industry-by-industry, and you will be able to evaluate the other States' programs. I think the public will be able to evaluate it and we will have the program well underway without missing the deadline, of course.

MR. OEMING: Mr. Chairman.

MR. STEIN: Yes, sir.

MR. OEMING: May I suggest that -- I think you have dictated something here in the way of a conclusion or recommendation that might be typed up and placed before the conferees in order to have more productive discussion about what we are talking about here. Would it be appropriate --

MR. EAGLE: Mr. Chairman, I question whether we need a statement or policies at this time. We are going to come back and report progress in six months, and we are going to do the very best we can.

MR. STEIN: Well, George, we know you are going to do the best you can, but I think you should know the ground rules on what the judgment is going to be made on, when we are going to evaluate this thing.

The issue here, when you come back in six months, is not that you are going to do the best you can, because you always do the best you can.

MR. EAGLE: No, you don't.

MR. STEIN: I was tempted when Dwight made that suggestion before, knowing him for a quarter of a century, anything he suggests that costs less than a quarter of a million dollars I am for, and this only costs $200,000, so I know it is good.

But the point is: I think we all have to move ahead compatibly with this, and with the recognition that all of us are going to look at each other's programs. I think the 80 percent operation on the total loading is the kind of minimum requirement that the conferees are going to look at. If a State will come in and say the best they can do only caused a reduction maybe of 50 percent of the total loadings, and that is from municipal and industrial sources, I think we should be forewarned that there may be some eyebrows raised.

MR. EAGLE: Well, I think we have all been sufficiently forewarned in this regard here today. It is in the record. I don't know why we need a resolution to this effect. That is what I am talking about.

MR. STEIN: Let me again get at it this way: You are going to have several problems here. The problem that you are going to have is that we want to get the phosphate issue resolved at this conference so we can foreclose this and move ahead just to progress meetings, and I think the Secretary of the Interior is under an obligation to make a recommendation. I would like to have it from you people so we can ask him to do it.

The second point you are going to have in this issue is that in the next six months, or from now on, you are going to -- all five States are going to be putting in applications for Federal construction grants. There is no question whether we do anything today or we don't do anything today. The question of phosphate removal is going to be raised with each one of those projects. I would think that if we had a statement from the conferees here, this would immeasurably facilitate the travail you will have in moving this ahead.

MR. EAGLE: Then we are stuck with 80 percent removal for that little Podunk town.

MR. STEIN: I did not say that.

MR. EAGLE: But that is the way it is going to be interpreted by the construction grant people. They will interpret it that way if we don't make some qualification.

MR. STEIN: I don't read it this way. If you say the record is clear, it is clear. But I think Mr. Oeming proposed we put this in writing so we will be abundantly clear.

MR. OEMING: Maybe I misinterpreted what this meeting was about, but I thought this was to attempt to resolve this question and come up with a statement that was agreeable to the conferees that would be submitted to the Secretary. This is an open question yet, isn't it, for the Secretary? If I am wrong, then we might as well go home, because we are all through discussing. Aren't we under an obligation, as conferees, to report to the

Secretary on this meeting?

MR. STEIN: What?

MR. OEMING: Aren't we under an obligation?

MR. STEIN: I think you are under an obligation to support it, but I think the Secretary is under an obligation to make a recommendation and the point is: if you don't make one, he is going to make one. If you do make one and you make one unanimously the experience has shown that he has always adopted that.

Now, this is the choice you have. I think the likelihood of a rigid requirement for all towns, Mr. Eagle, is more likely to come if the conferees don't come to a conclusion than if they do.

MR. EAGLE: You are saying now at least 80 percent of total load.

MR. STEIN: Yes, sir.

MR. EAGLE: Of the total load.

MR. STEIN: Yes, right.

MR. EAGLE: Then, it comes down to an individual project and how do you judge on this individual project how much removal this individual project needs?

MR. STEIN: Well, this is the judgment of the State agency.

MR. EAGLE: Let's put that in there then. This is to be in the judgment of the State agency whether a little village does or does not need phosphate removal.

MR. STEIN: That is right. Of course, this is implicit --

MR. EAGLE: But we have problems with construction grants people, too.

MR. STEIN: This is what Mr. Oeming suggested, that we reduce this to writing.

MR. EAGLE: All right. If you make this abundantly clear in the resolution.

MR. STEIN: Surely. This is the point -- because you are going to have this anyway.

Now, do you people have time to stay here?

MR. OEMING: Well, yes. Can't you get your secretary to type this up -- what you said on the record here?

MR. STEIN: Oh, surely. We will be dlighted to do that.

MR. METZLER: Let's see if we can't try to dictate this now.

MR. STEIN: Surely.

MR. METZLER: I suggest everybody have one crack at it. You tried. It sounded pretty good. Let me try.

Dwight Metzler

I would like to see this preceded with a statement that our goal is maximum removal of phosphates from the large sources of pollution contributary to Lake Erie, and that we are agreed that each State will submit a plan for reducing 80 percent of its total phosphate load -- not less than 80 percent --

MR. EAGLE: That is a good amendment.

MR. METZLER: -- not less than 80 percent of its total phosphate load in whatever you think is a reasonable time. Six months has been suggested.

It seems to me a simple two-sentence statement like that would do the job.

MR. STEIN: Well, I don't know that it gives him his protection.

MR. METZLER: Oh, and if those bloody construction grants people don't quit holding up projects, we are going to start calling our Congressmen. How is that?

MR. STEIN: Well, you do in any event.

Again -- and I think this is essential -- I think if you could buy this, can we say: "The conferees previously adopted the policy of maximum phosphate removal from municipal and industrial waste sources to protect the water quality of Lake Erie. At the present time, it is believed that the States can best move this program forward by providing a minimum of an 80 percent reduction of phosphorus -- and 80 percent reduction of total phosphorus loadings from their respective States. A list of projects indicating phosphate removal to accomplish this shall be prepared by each State and submitted to the conferees within six months. Variance of individual sources, particularly small sources, shall be within the discretion of each State agency as long as the total phosphorus reduction is met."

MR. METZLER: Murray, you could clean that last sentence up by just saying: "The decision as to phosphorus removal at the small sources is a responsibility of the State so long as the total loading is met."

MR. STEIN: Right. That is perfectly fine. Right. Okay?

MR. EAGLE: Sounds all right to me.

MR. STEIN: Now, in addition to that we have -- I don't know that we have to go over this -- two other conclusions: "One, that a Technical Committee under the chairmanship of Mr. Oeming to consider pollution from boats will be established. The Department of the Interior will supply such clerical and technical assistance as may be required. The conferees will notify Mr. Oeming and the clerical staff of its appointments to the committee not later than next Friday, the eleventh. The committee will meet as soon as possible and report to the conferees as to whether they have a recommendation on controlling of pollution from boats, or whether they have a proposal for further meetings of the committee."

MR. EAGLE: Question.

MR. STEIN: Yes.

MR. EAGLE: I would like to ask you and Mr. Oeming whether this will be primarily directed at proposed regulation with regard to pleasure craft, or would you envision it as a technical committee or as an administrative committee?

MR. STEIN: Administrative. Isn't that right?

MR. OEMING: Yes.

MR. EAGLE: So the people that deal with this administratively should be the ones on this committee. For instance, our Chief of Watercraft in the State would be the one that would be on this, I think.

MR. STEIN: I think the big issue, just to put it bluntly, is to whether you are going to have holding tanks or macerator chlorinators or a device of that kind and how you are going to provide it.

MR. EAGLE: In that case maybe you need technical and administrative people both.

Is there any objection to having more than one person?

MR. STEIN: No. What we want to avoid -- and I think we avoided it here -- is the situation that we have on the Mississippi, where they have one regulation on one side and one on the other side, and a guy with his macerator chlorinator goes over on the other side and flushes his boat and then he gets caught by a warden and fined fifty bucks, and this is the kind of very awkward situation we get into.

Now, the other is that a technical committee will be established with Mr. George Eagle of Ohio as chairman. On request, the Department of Interior will provide clerical and technical assistance. Members of this committee -- can you get that in, Mr. Eagle, by the eleventh, too? -- will be given to Mr. Eagle by next Friday, the eleventh, these being Federal and State members.

This committee shall, within six months or sooner, if possible, report to the conferees specific programs including staffing and financing of developing a model for Lake Erie, the monitoring flow patterns, control areas and deep water dispersal, as related to the nutrient problem in Lake Erie, and a program which might lead to allocations on a pound-per-day basis among the five States of nutrient discharges to Lake Erie.

Okay?

Yes, what else?

MR. BOARDMAN: May I go back to the first conclusion?

MR. STEIN: Yes.

MR. BOARDMAN: Whenever you set a percentage removal you have to have some base from which to work and what year base are we going to be talking about as far as base loads? Are we talking about 1968, 1972, or just what year base?

MR. STEIN: You mean that 80 percent?

MR. BOARDMAN: Yes.

MR. STEIN: Well, that was purposely left that way.

Well, if you want to, we can get a base if you are going to deal with a figure certain. The point is: I don't think we should delude ourselves that we are being tremendously precise with this 80 percent. I think what is meant is 80 percent of the current loadings on the total basis for this program, as you move ahead.

Now, my notion, unless we give you that kind of flexibility, you are going to be folded into some figure. It should be recognized that the 80 percent is just a minimum that we are thinking of in order to make a judgment of a program and to get this forward. I do not think we should be thinking in terms of a real technical operation.

Now, the reason I say that is I think your model -- we are not going to be able to come up with really meaningful figures on these bases except these guesses that the Technical Committee had, and they are as good as any, without the model, the monitoring, the flow patterns, the control areas, and so forth. Any kind of precision we get here, we may run into what George was worried about, that we may lock ourselves into a policy or a program without knowing too much about what you are doing.

MR. EAGLE: That is for sure. We don't know what the problem is; we haven't determined the problem yet.

MR. BOARDMAN: The reason I raised the question is sort of the same theory George expressed that if somehow these numbers would become the State allocations, if there were any chance for that, I would at least want the same base being used.

MR. STEIN: They wouldn't. I suggest you use, as best you can, 80 percent of the current figures, and as far as I know, there isn't any better guess than a Technical Committee. If you can come up with a better one, fine.

MR. METZLER: Well, what the representative from Pennsylvania is pointing out here is that if this should become the base for an allocation, the dirtiest people are going to be rewarded by having a highest base. It is just like planting more cotton the year before they established the base for cotton, and I certainly would want to be sure we weren't going to do that.

MR. STEIN: Certainly not, and this is what I said. The most difficult thing is an allocation operation. Sometimes we have to do this.

We have had cases, as you probably know, where, for example, with certain industries, we couldn't get any figures on their waste loading. People have made a statement -- at least technical people and maybe you people in the States have done it -- based on production figures, and then the industry got all excited and said, no, we are doing much better than that, and they told us what we wanted to know in the first place.

We also have one operation with allocation when we worked this out -- and I think this is a matter of public record -- this is the Red River of the North between Minnesota and North Dakota, we were battling on the pounds per day, and this was organic loadings, and there was no difference. Finally we -- maybe arbitrarily -- took the population and we split the river allocation federally among the two States. Well, the howls reached all of the way to Washington and back and they said this wasn't anything appropriate for the Federal Government to do, that this was a State prerogative, and we said, "This is fine."

Then the States got together and made their own split and allocations and they came up with the same total pounds per day, because we knew more about that. Any more than that would have polluted the river, and we have a program moving ahead.

Now, I am not suggesting -- this is going to be the most difficult thing that we are ever going to be able to work -- a pound allocation here. All I am saying is that this committee should look into this. I generally would say that I would approach any definitive notion on allocation among the States on waste loading into a watercourse with extreme care. If we can lick this without that, this may be fine.

But, again, to you fellows here: Do not think that we are forming any basis for allocation because that is the most touchy area you can get into in the water program, as you well know.

MR. BOARDMAN: We have had quite a bit of experience with allocating waste loads in the Delaware Estuary, too, so I know what the problem is.

MR. STEIN: And if you have been reading the papers and reading about Arizona and California, they have had some problems in allocation, too.

MR. METZLER: Since 1920.

MR. POSTON: I would like to go back to this same recommendation or conclusion that you have drawn here and ask a question with regards to the terminal date for construction of these waste treatment facilities that would remove phosphate. This would still reman as --

MR. STEIN: That hasn't been changed.

MR. POSTON: -- 1971.

MR. STEIN: What we are dealing with here is a compliance report.

Now, if we get these lists -- we always have this question -- you know, someone asks me about these conclusions of the conference, and they say, "How firm are they?" And they are just firm until the next negotiations, and this doesn't mean that sometimes we don't negotiate and we go to court or go on, but if the lists come in and we see that we don't have any realistic figures, the conferees are going to review that next time. Now, this isn't unusual. I think we are going to be faced with that problem in your home base of Chicago at the end of this year.

MR. POSTON: Well, I think this could be made very advantageously as an addition to this.

MR. STEIN: That what?

MR. POSTON: That the terminal date for construction of these phosphate removal facilities will remain as 1971.

MR. STEIN: I have no objection to that.

Is that all right? Okay.

Any other comments or questions?

MR. METZLER: I think the record ought to have been cut before Poston got on it with that last comment of his.

Two years ago, I got bloodied up on my way to report to work in New York from this conference pointing out the unrealistic time dates that had been set, and I am not going to do it again. Detroit isn't going to have any treatment works built by 1971.

MR. OEMING: How do you know? Do you want to bet?

MR. STEIN: Wait a minute. Do you fellows want this on the record?

MR. METZLER: I thought we struck the record just before Wally made his statement.

MR. STEIN: Let's go off the record.

MR. POSTON: We didn't.

MR. STEIN: Let's go off the record.

(Discussion off the record.)

MR. STEIN: Are there any other questions? Does anyone else want to say something?

MR. OEMING: I don't want to say anything.

MR. STEIN: If not, then I want to thank you for coming.

By the way, I really do think we have accomplished a lot here, and what we, I think have done: We are on our way and gotten over the hump of the most vexing problem in the Lake Erie cleanup situation. This, without a doubt, has been our most difficult problem here. I think we are on our way. I do think that we have a realistic time schedule, and I think what we are doing is everything that the state of the art can ask for at the present time.

I think also -- and I don't want to end on this last pessimistic note -- but I think Mr. Metzler's point should be well taken. What we do in phosphate removal and what we are doing with primary or secondary treatment isn't going to be a guarantee that we are going to have a clean lake without anything more. If we do, I will be very much surprised. This is a beginning. We ask you to be realistic in looking for the results of what we are going to do. We are going to keep looking at this lake very, very carefully, and I do believe that if we are going to preserve Lake Erie as a great freshwater resource, it is going to take continuing effort, and applying continuing knowledge, and spending a lot more money as facts come forward.

But I do think we have taken a significant first step and with this phosphate removal I think we will be taking the first great giant step for our time.

Thank you very much. We stand adjourned.

(Whereupon, at 1:00 p.m., the conference was adjourned.)

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